8.5. 802.11n HT20 SISO MODE IN THE 2.4 GHz BAND

8.5.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (1)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS for Chain 0

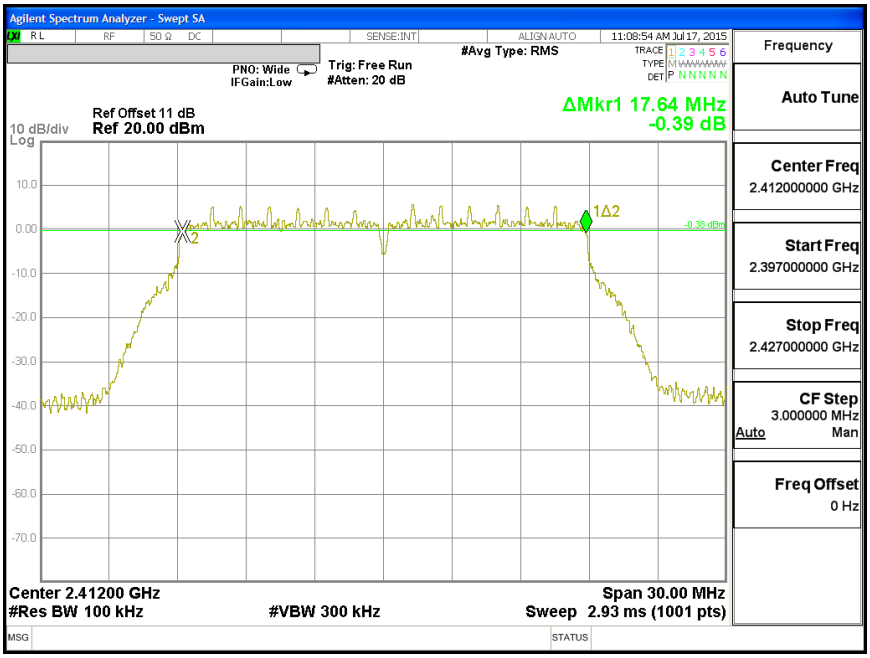
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.64	0.5
Mid	2437	17.61	0.5
High_11	2462	17.61	0.5
High_12	2467	17.61	0.5
High_13	2472	17.64	0.5

RESULTS for Chain 1

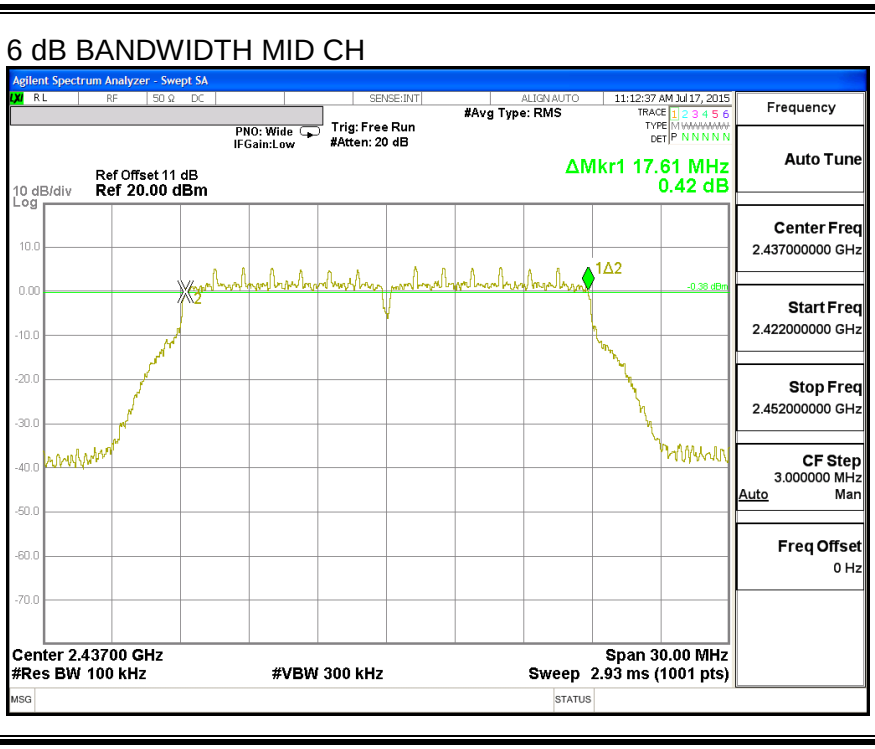
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.61	0.5
Mid	2437	17.61	0.5
High_11	2462	17.61	0.5
High_12	2467	17.64	0.5
High_13	2472	17.61	0.5

6 dB BANDWIDTH, Chain 0

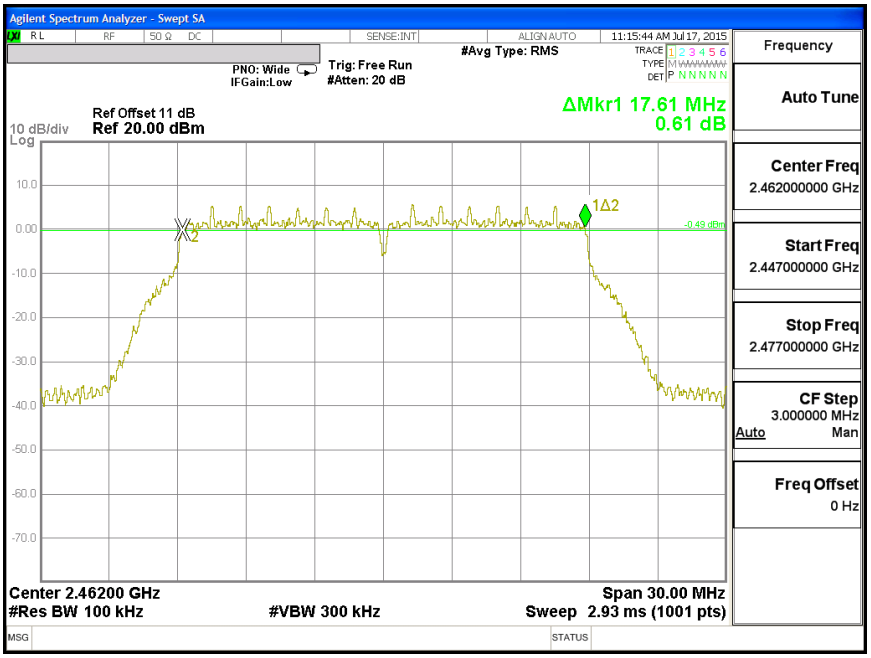
6 dB BANDWIDTH LOW CH



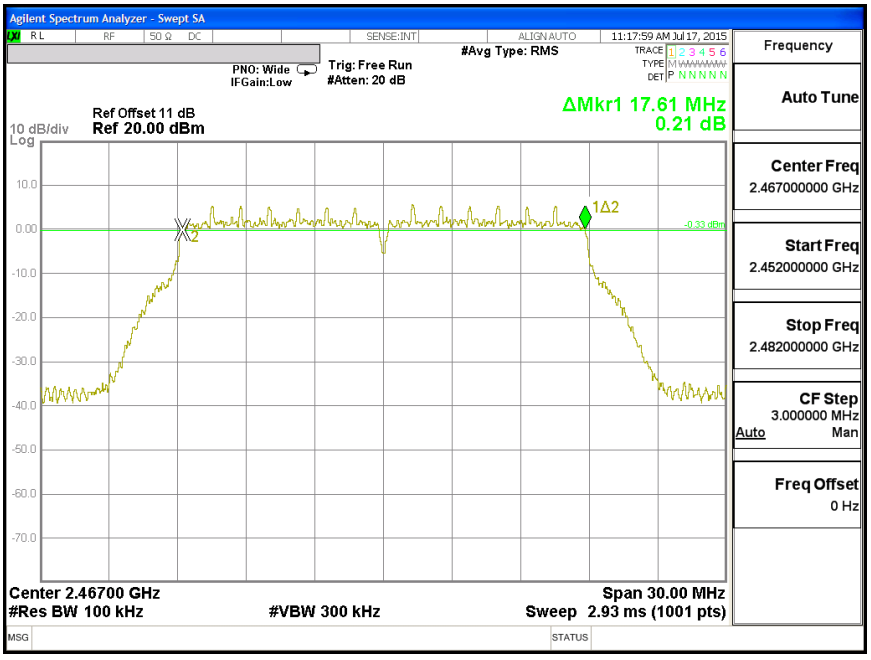
6 dB BANDWIDTH MID CH



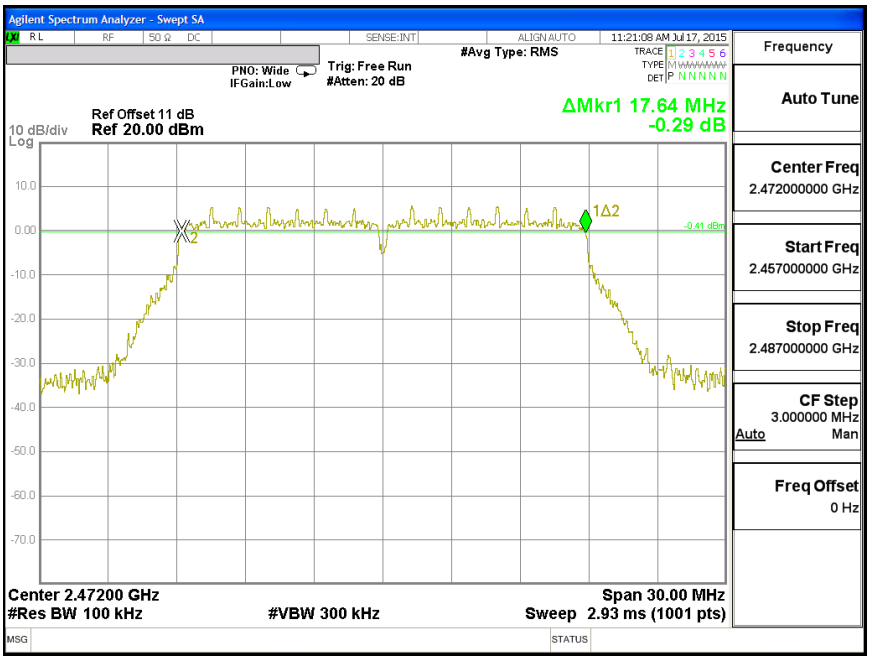
6 dB BANDWIDTH HIGH CH11



6 dB BANDWIDTH HIGH CH12

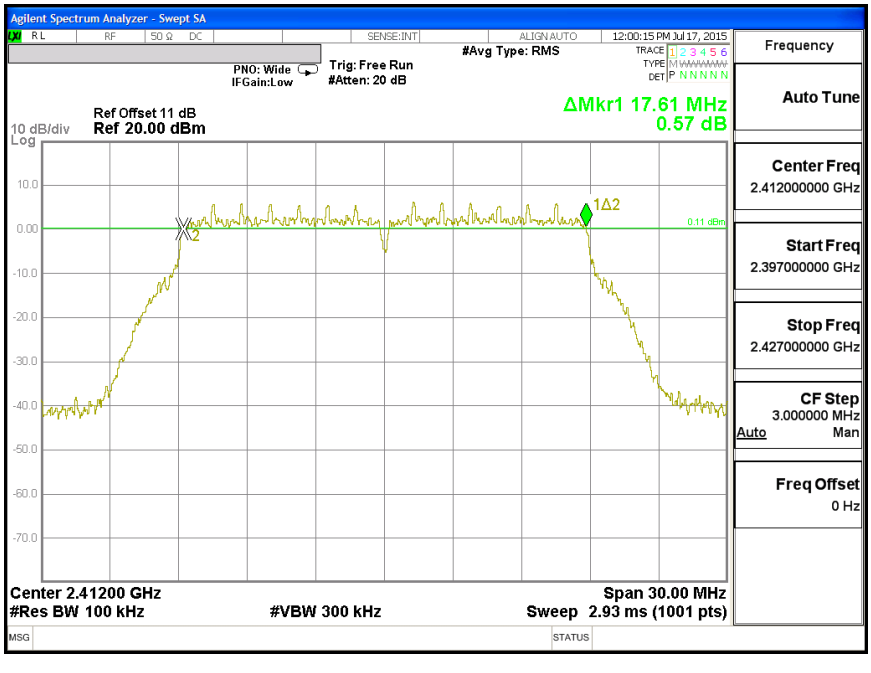


6 dB BANDWIDTH HIGH CH13

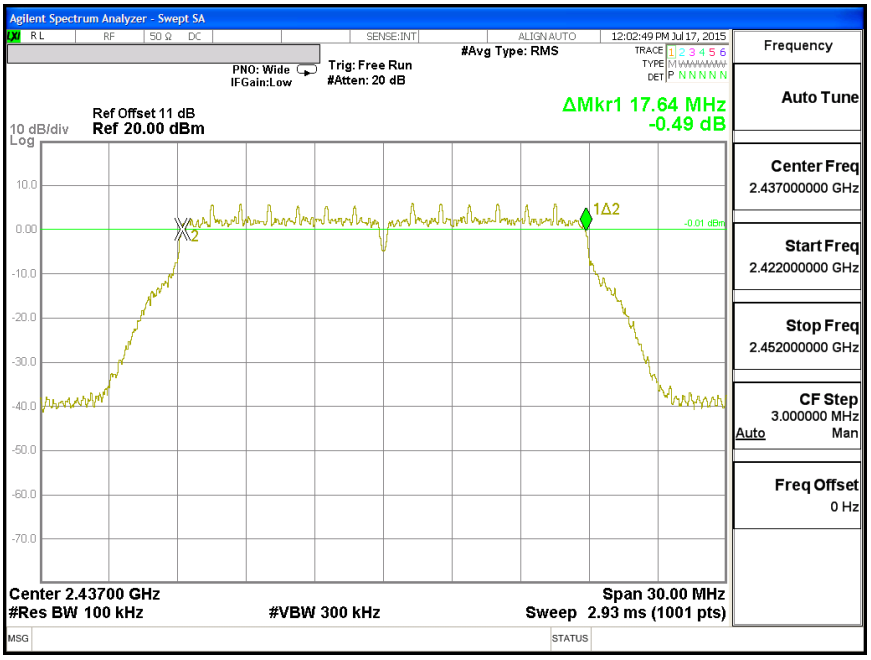


6 dB BANDWIDTH, Chain 1

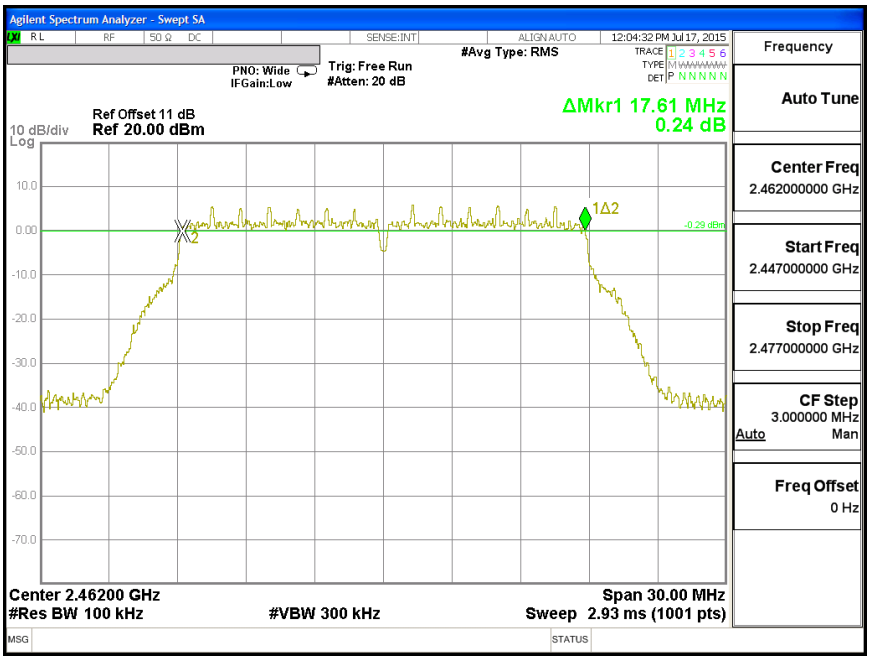
6 dB BANDWIDTH LOW CH



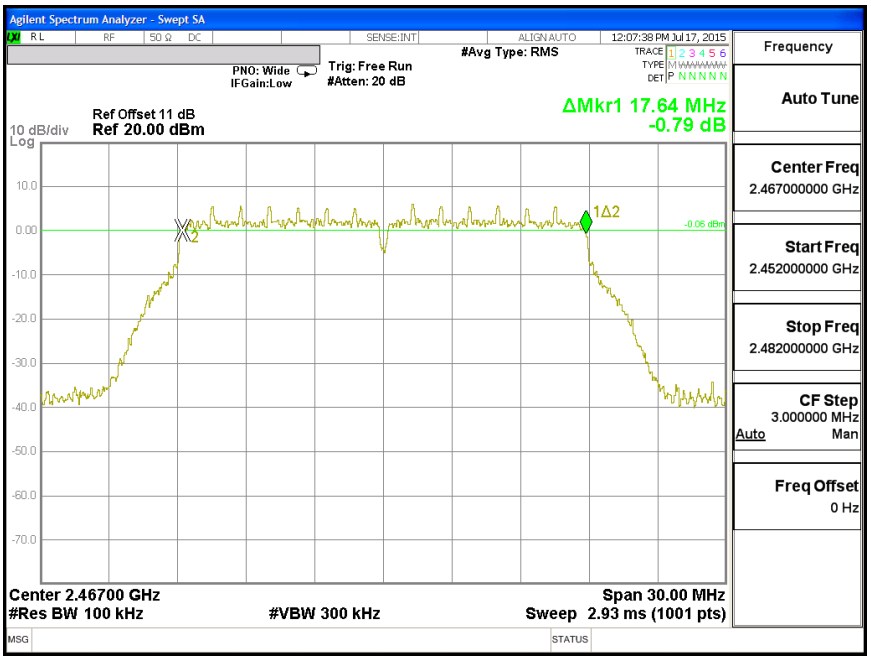
6 dB BANDWIDTH MID CH



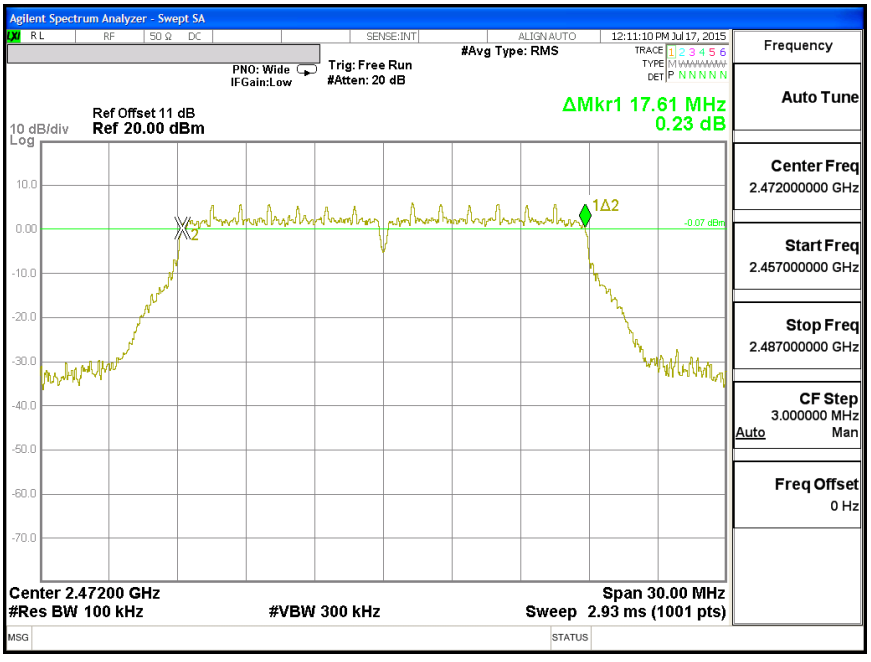
6 dB BANDWIDTH HIGH CH11



6 dB BANDWIDTH HIGH CH12



6 dB BANDWIDTH HIGH CH13



8.5.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS for Chain 0

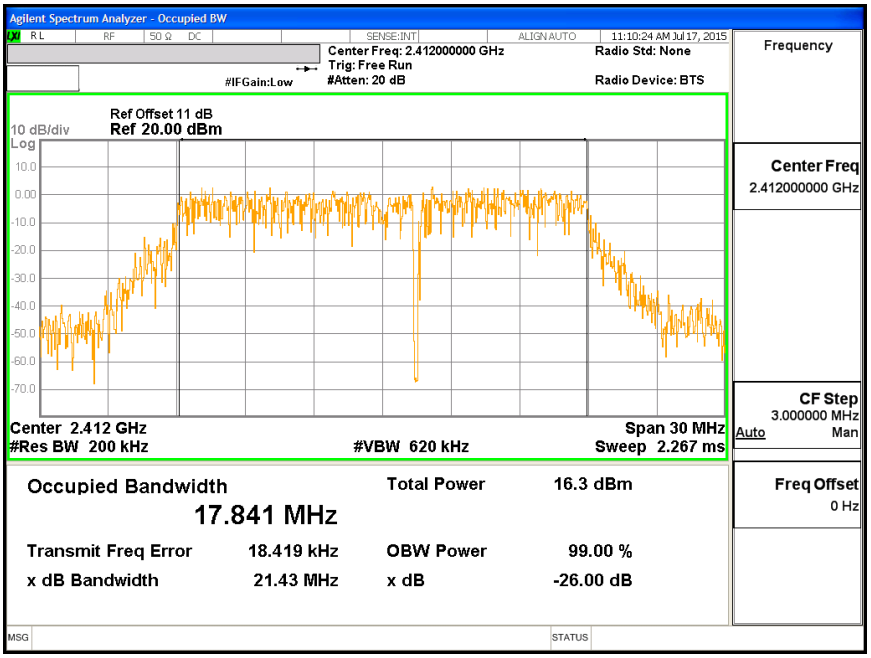
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.841
Mid	2437	17.745
High_11	2462	17.789
High_12	2467	17.745
High_13	2472	17.706

RESULTS for Chain 1

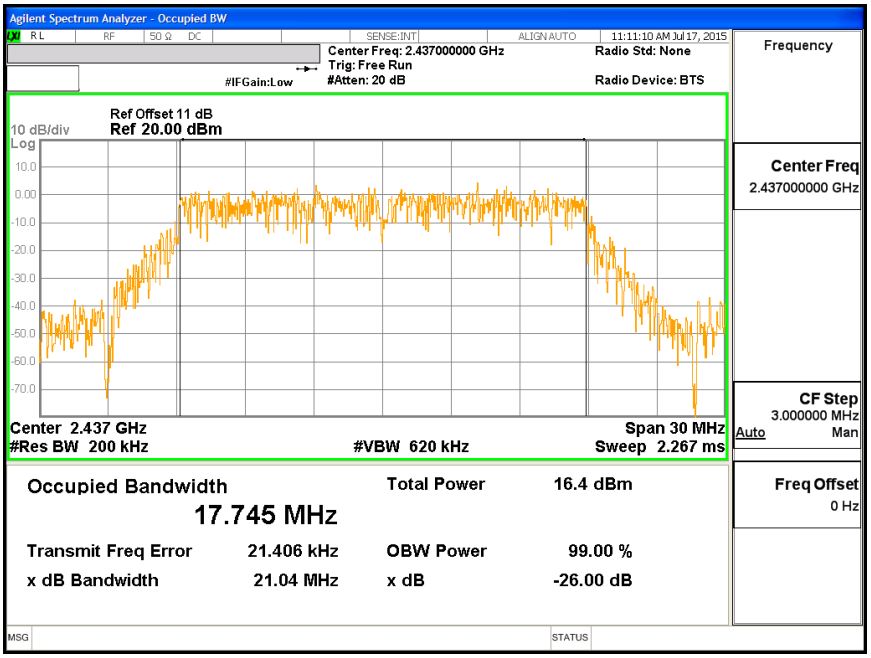
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.683
Mid	2437	17.742
High_11	2462	17.785
High_12	2467	17.762
High_13	2472	17.730

99% BANDWIDTH, Chain 0

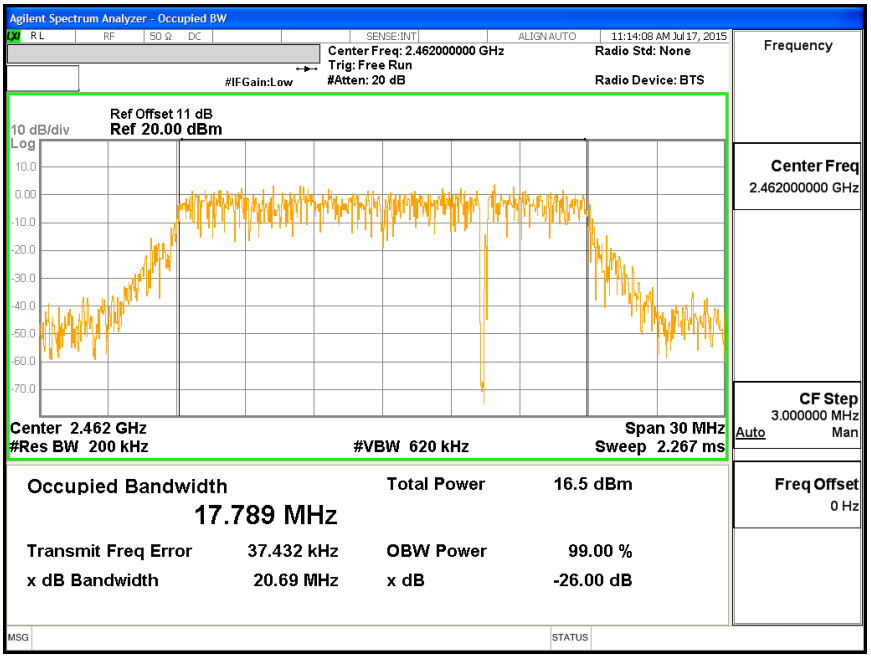
BANDWIDTH LOW CH



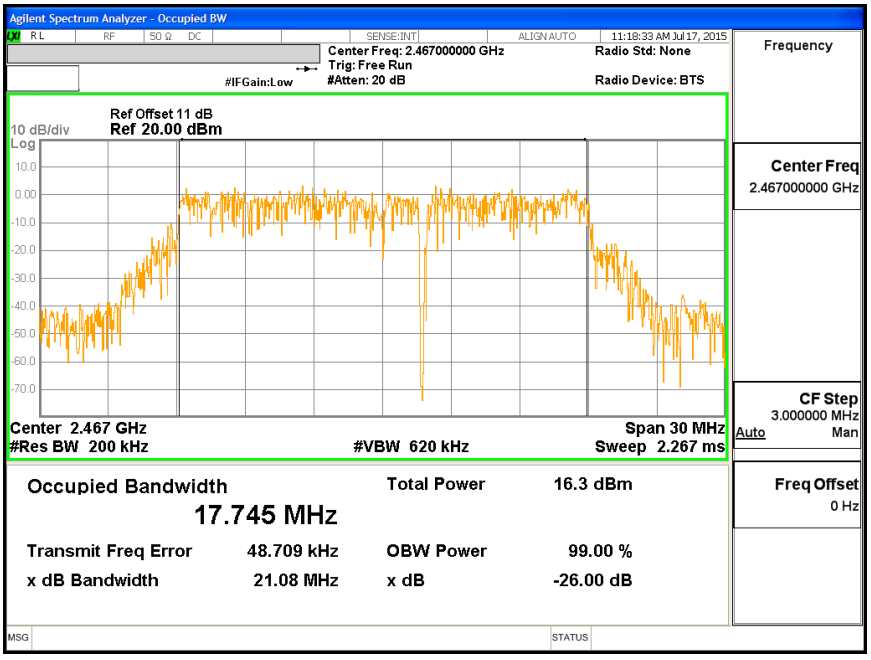
BANDWIDTH MID CH



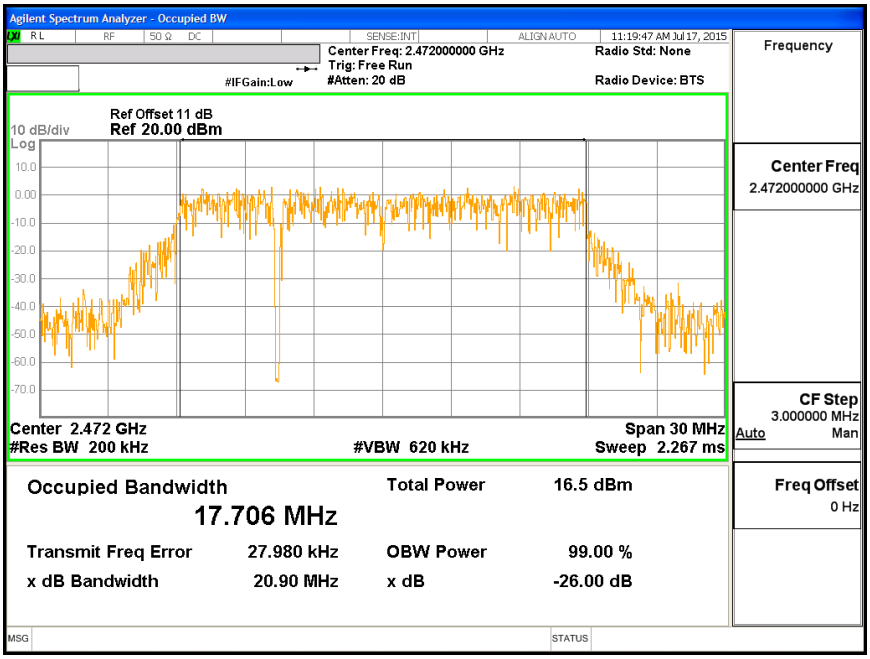
BANDWIDTH HIGH CH 11



BANDWIDTH HIGH CH 12

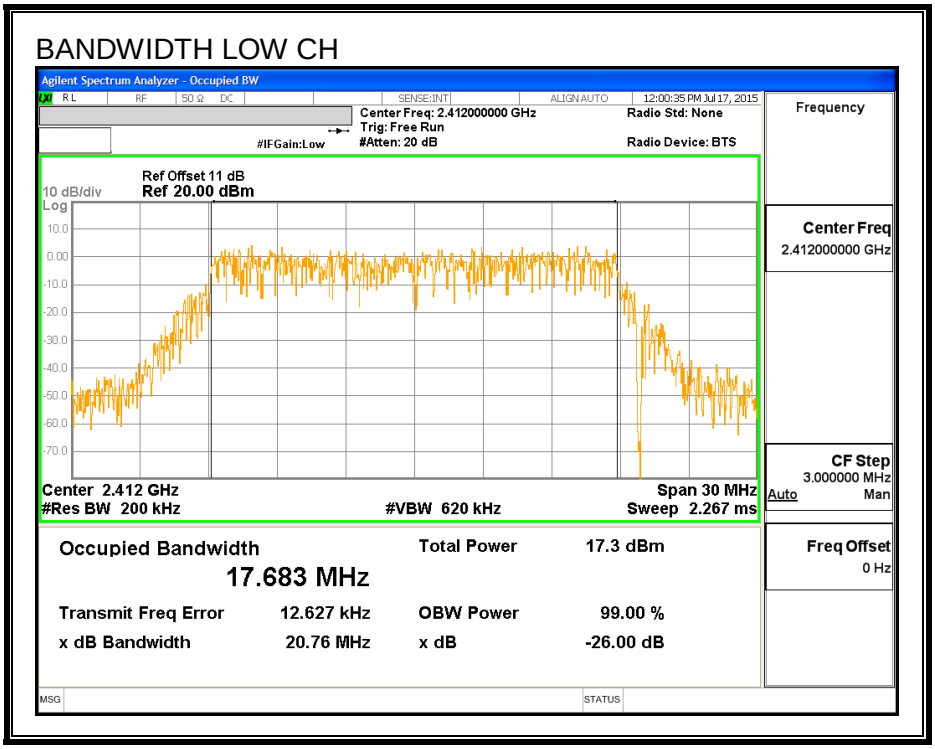


BANDWIDTH HIGH CH 13

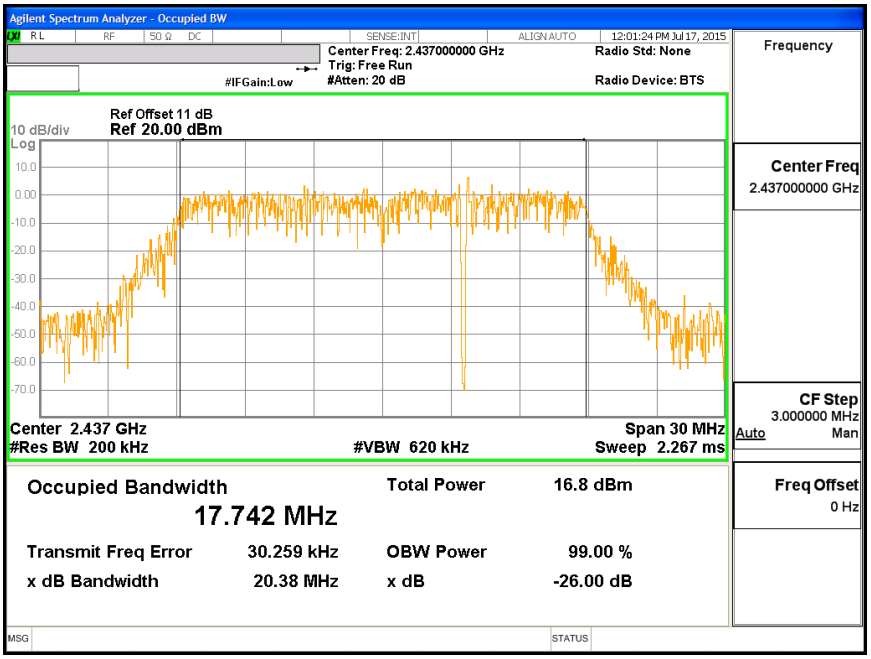


99% BANDWIDTH, Chain 1

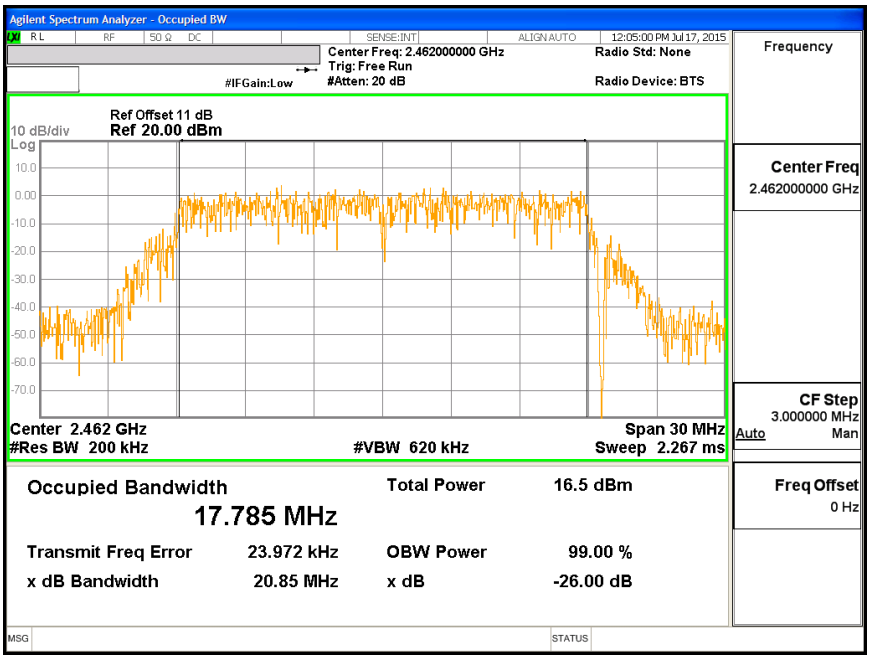
BANDWIDTH LOW CH



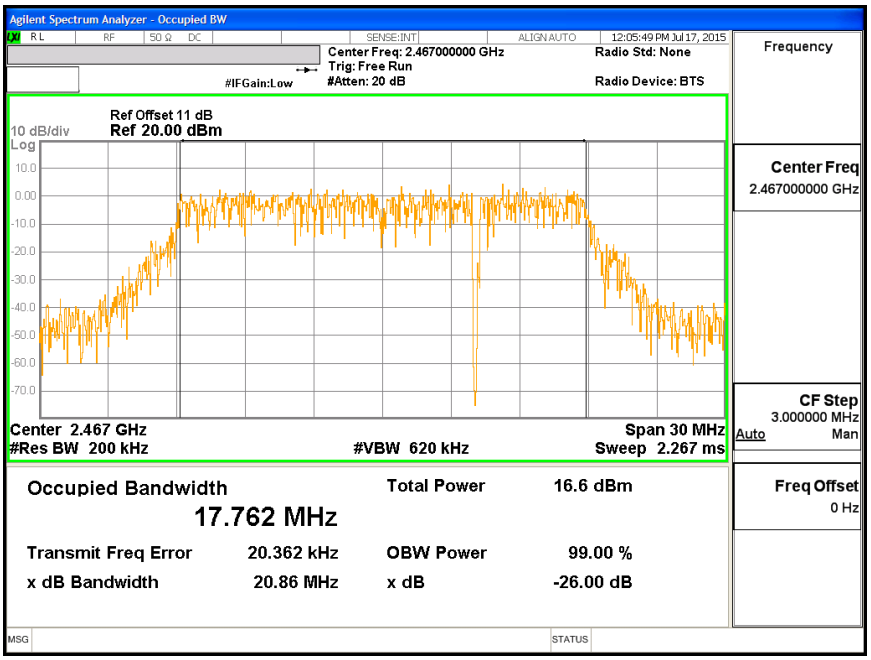
BANDWIDTH MID CH



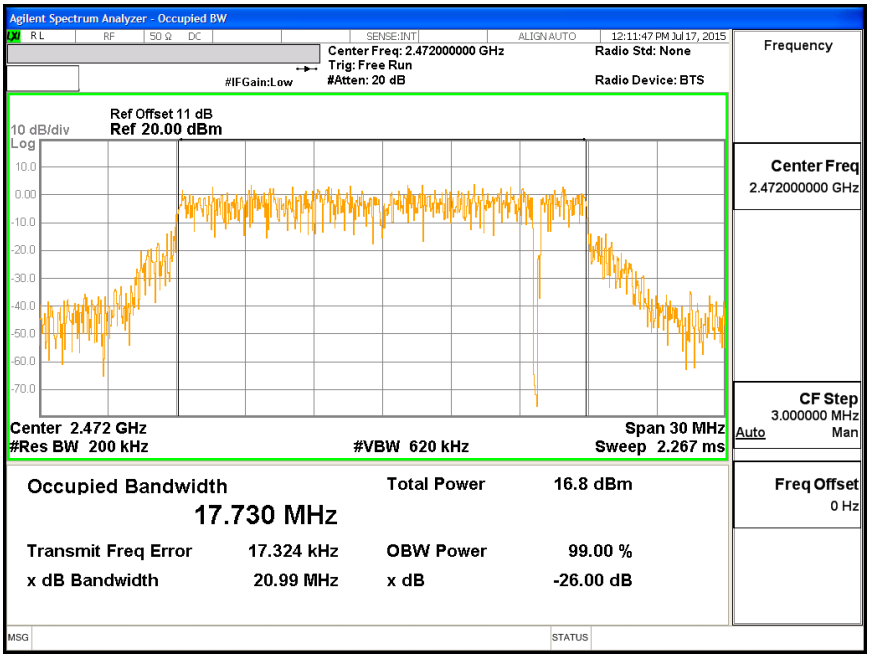
BANDWIDTH HIGH CH 11



BANDWIDTH HIGH CH 12



BANDWIDTH HIGH CH 13



8.5.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS for Chain 0

Channel	Frequency (MHz)	Power (dBm)
Low	2412	15.88
Mid	2437	15.86
High_11	2462	14.50
High_12	2467	11.44
High_13	2472	3.37

RESULTS for Chain 1

Channel	Frequency (MHz)	Power (dBm)
Low	2412	15.84
Mid	2437	15.83
High_11	2462	14.37
High_12	2467	11.43
High_13	2472	3.36

8.5.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 (5.4) (4)

For systems using digital modulation in the 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS FOR Chain 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.60	30.00	30	36	30.00
Mid	2437	-0.60	30.00	30	36	30.00
High_11	2462	-0.60	30.00	30	36	30.00
High_12	2467	-0.60	30.00	30	36	30.00
High_13	2472	-0.60	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	23.19	23.19	30.00	-6.81
Mid	2437	23.13	23.13	30.00	-6.87
High_11	2462	21.78	21.78	30.00	-8.22
High_12	2467	18.68	18.68	30.00	-11.32
High_13	2472	10.63	10.63	30.00	-19.37

RESULTS FOR Chain 1

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.50	30.00	30	36	30.00
Mid	2437	-0.50	30.00	30	36	30.00
High_11	2462	-0.50	30.00	30	36	30.00
High_12	2467	-0.50	30.00	30	36	30.00
High_13	2472	-0.50	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power

Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	23.07	23.07	30.00	-6.93
Mid	2437	23.02	23.02	30.00	-6.98
High_11	2462	21.69	21.69	30.00	-8.31
High_12	2467	18.63	18.63	30.00	-11.37
High_13	2472	10.60	10.60	30.00	-19.40

8.5.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (2)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS for Chain 0

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.60	-10.60	8.0	-18.6
Mid	2437	-10.56	-10.56	8.0	-18.6
High_11	2462	-11.12	-11.12	8.0	-19.1
High_12	2467	-14.82	-14.82	8.0	-22.8
High_13	2472	-22.39	-22.39	8.0	-30.4

RESULTS for Chain 1

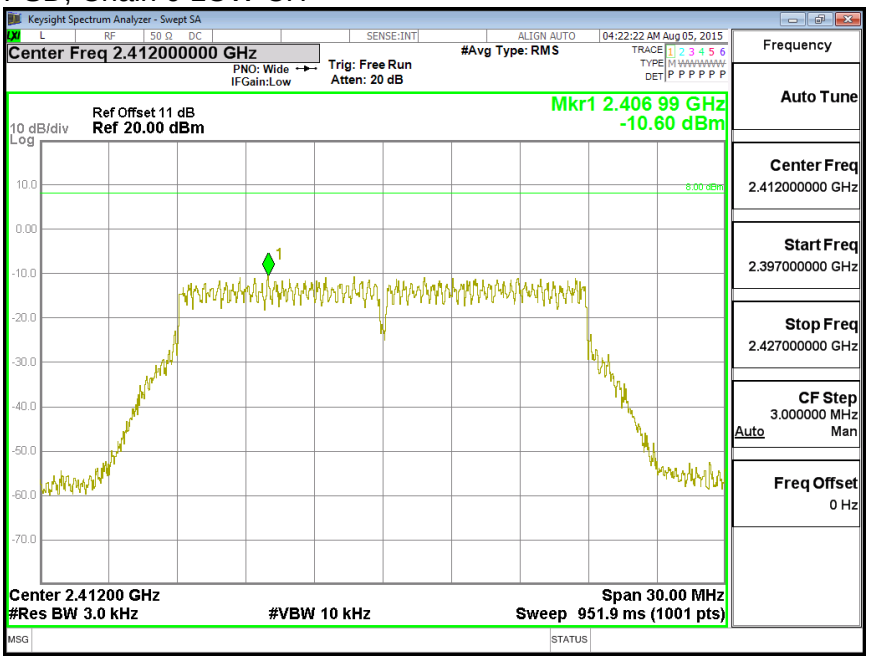
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

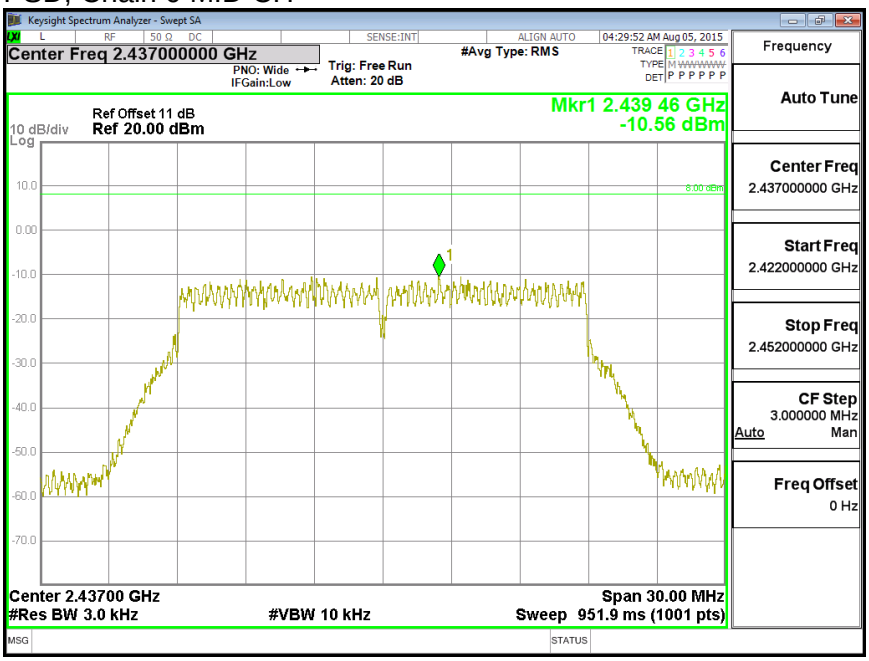
Channel	Frequency (MHz)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.27	-10.27	8.0	-18.3
Mid	2437	-10.17	-10.17	8.0	-18.2
High_11	2462	-11.13	-11.13	8.0	-19.1
High_12	2467	-14.35	-14.35	8.0	-22.4
High_13	2472	-22.15	-22.15	8.0	-30.2

PSD, Chain 0

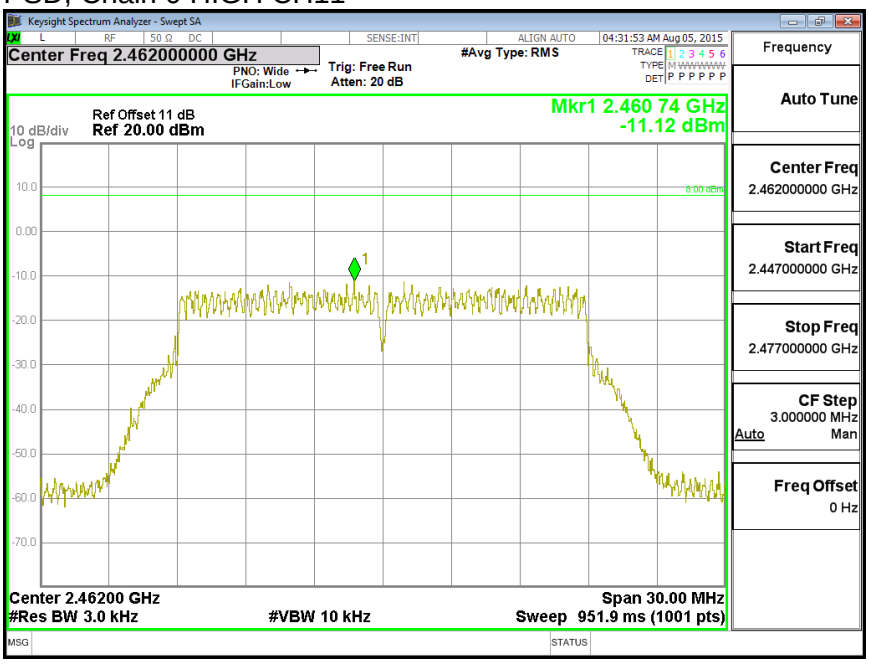
PSD, Chain 0 LOW CH



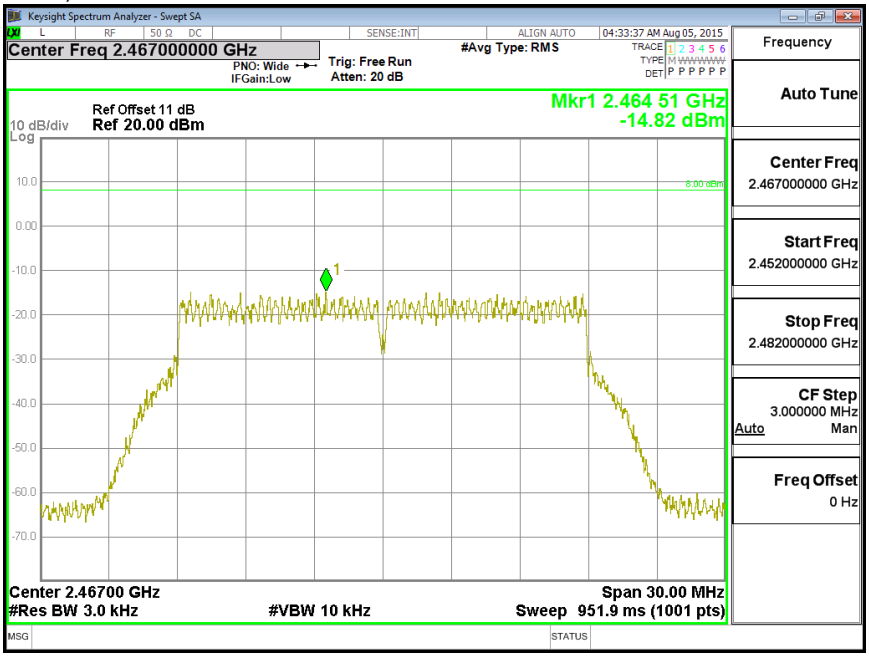
PSD, Chain 0 MID CH



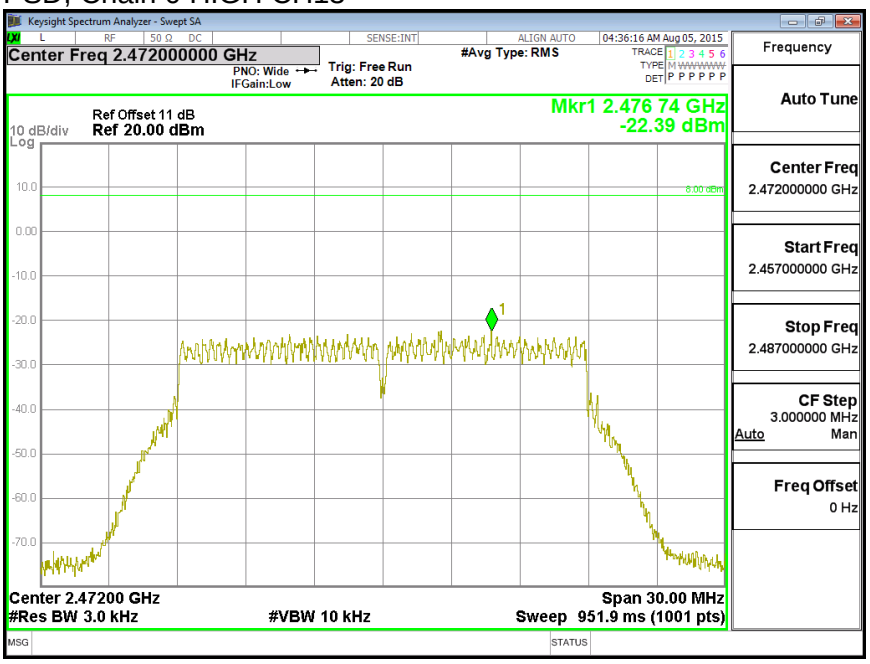
PSD, Chain 0 HIGH CH11



PSD, Chain 0 HIGH CH12

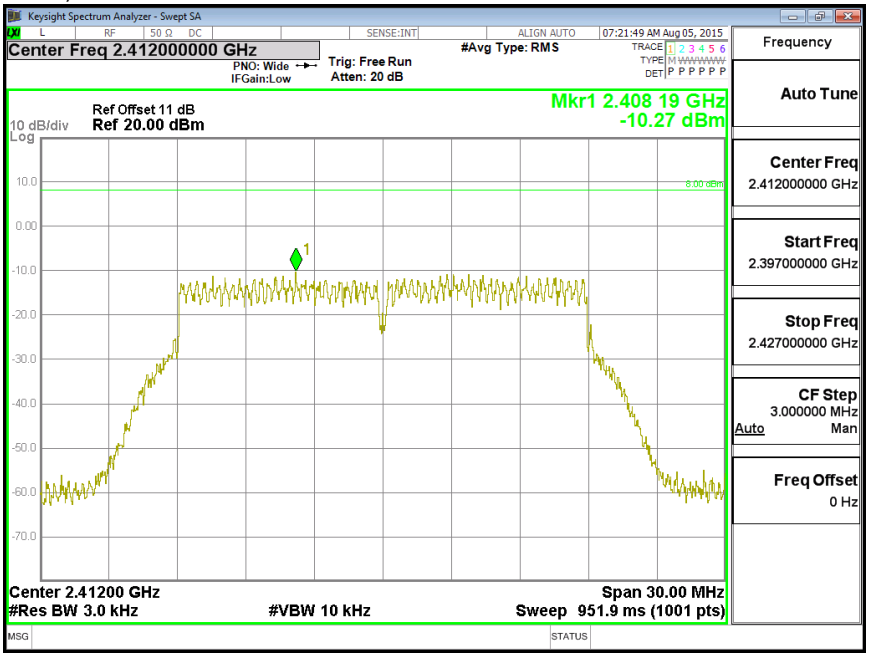


PSD, Chain 0 HIGH CH13

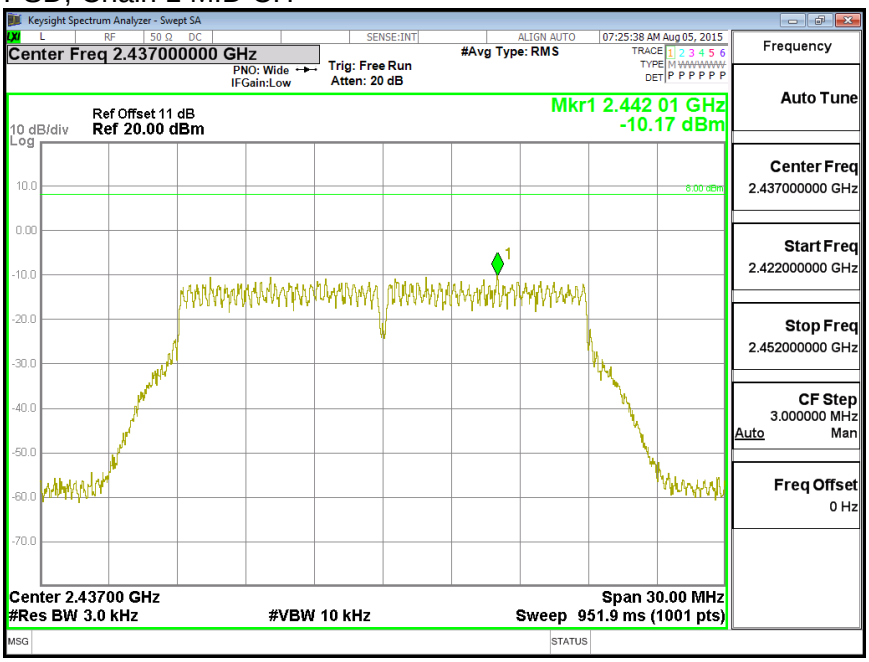


PSD, Chain 1

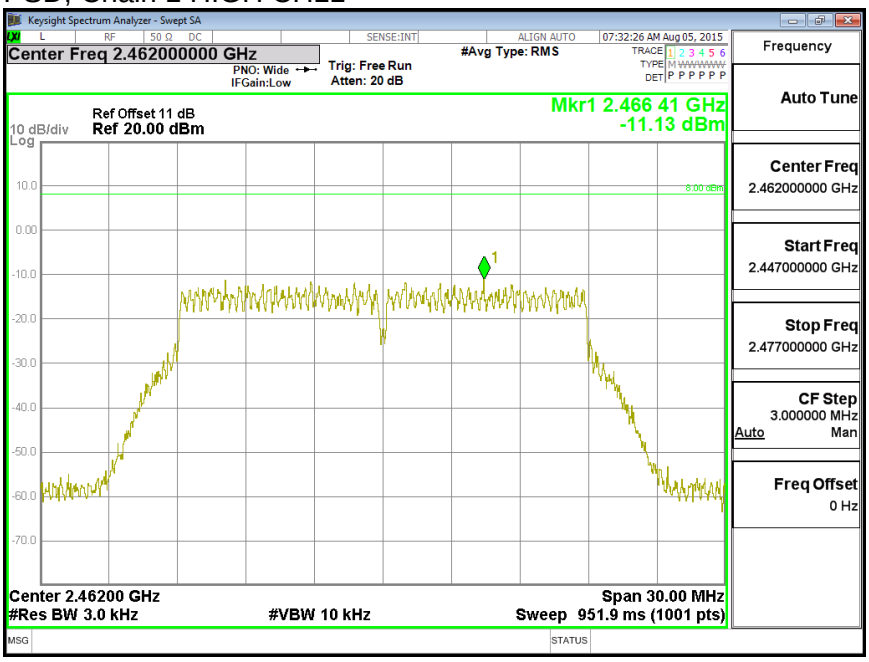
PSD, Chain 1 LOW CH



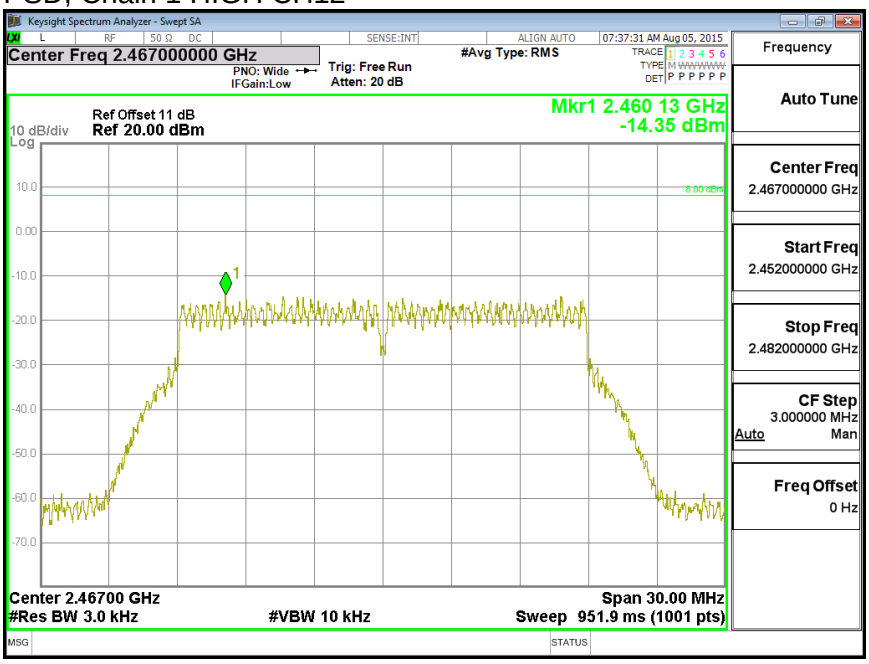
PSD, Chain 1 MID CH



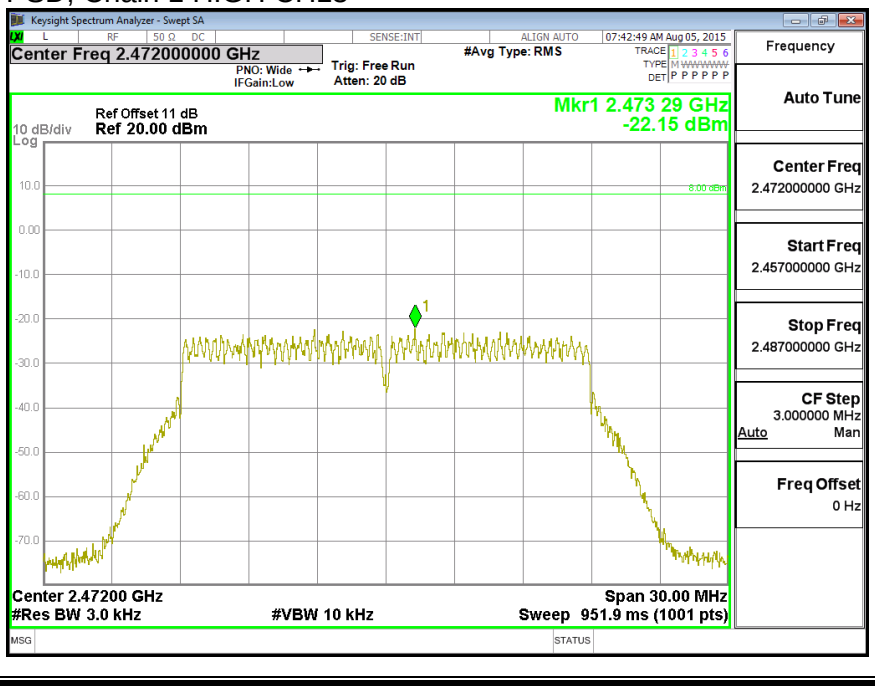
PSD, Chain 1 HIGH CH11



PSD, Chain 1 HIGH CH12



PSD, Chain 1 HIGH CH13



8.5.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

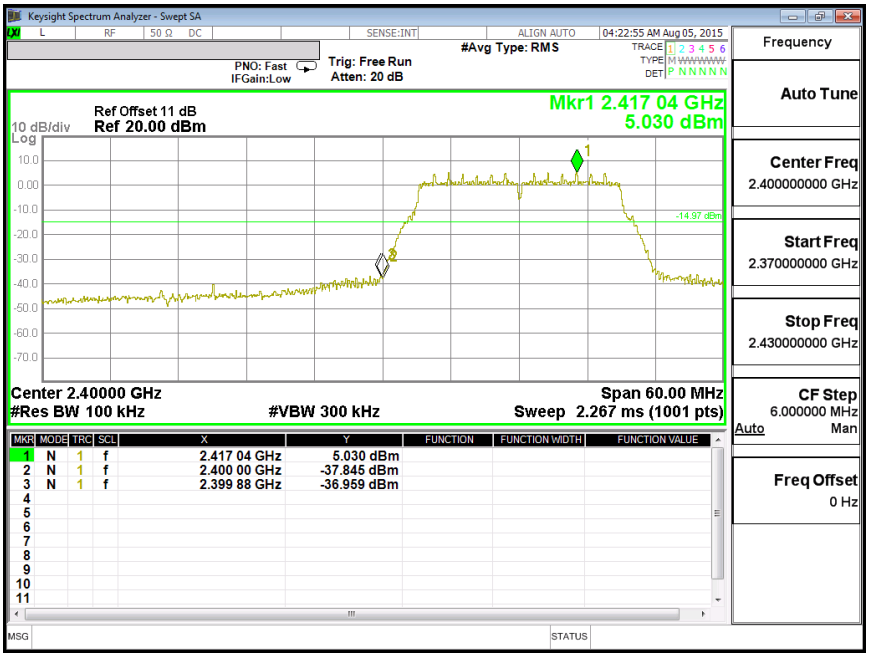
IC RSS-247 (5.5)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

RESULTS for Chain 0

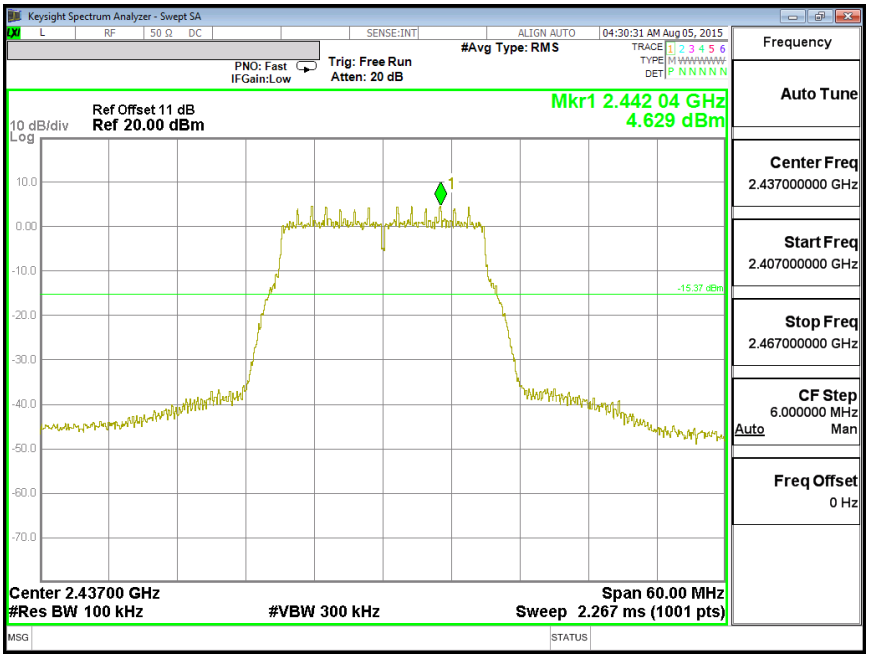
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



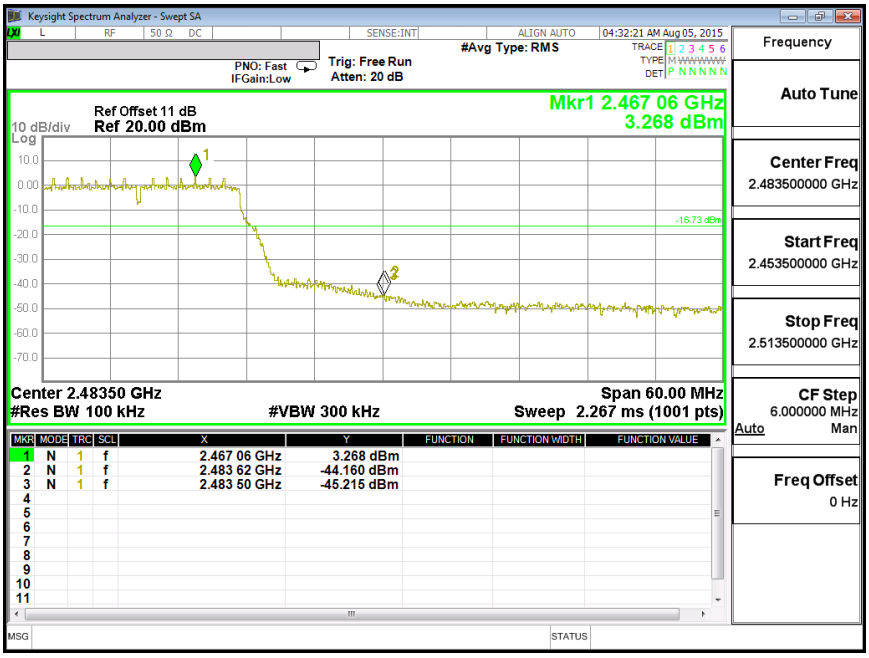
MID CHANNEL BANDEDGE

AUTHORIZED BAND EDGE MID CH

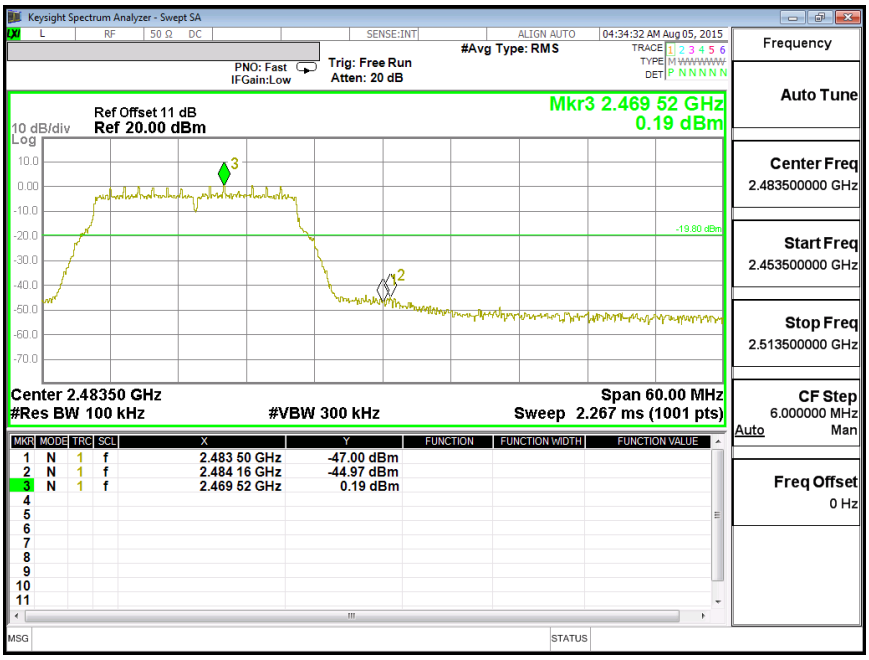


HIGH CHANNEL BANDEDGE

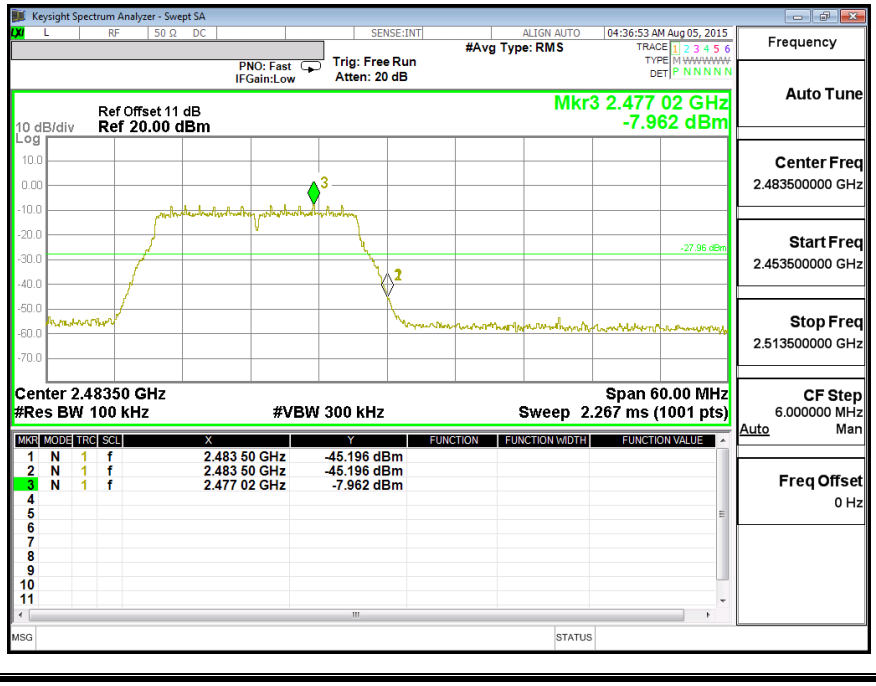
AUTHORIZED BAND EDGE HIGH CH11



AUTHORIZED BAND EDGE HIGH CH12

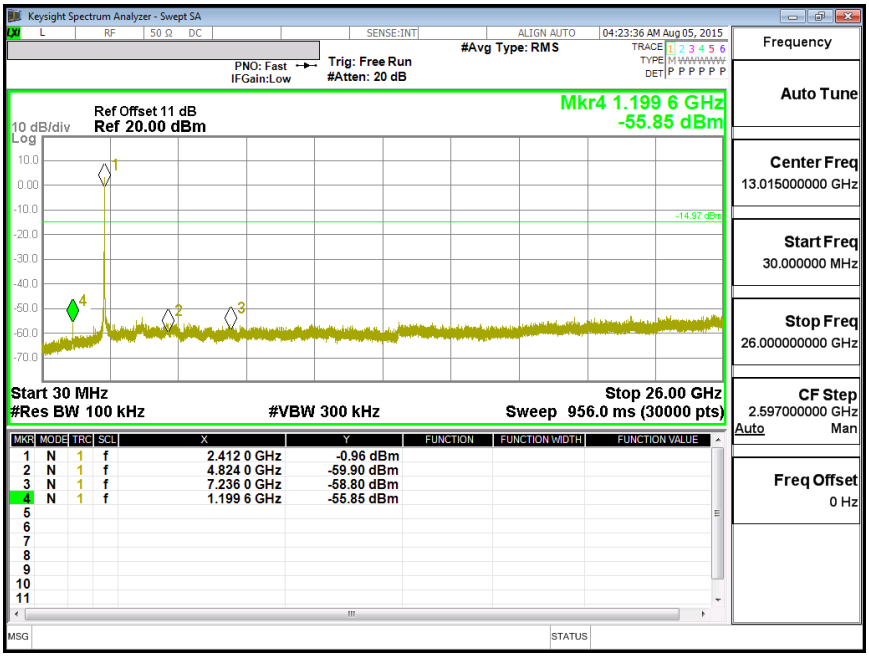


AUTHORIZED BAND EDGE HIGH CH13

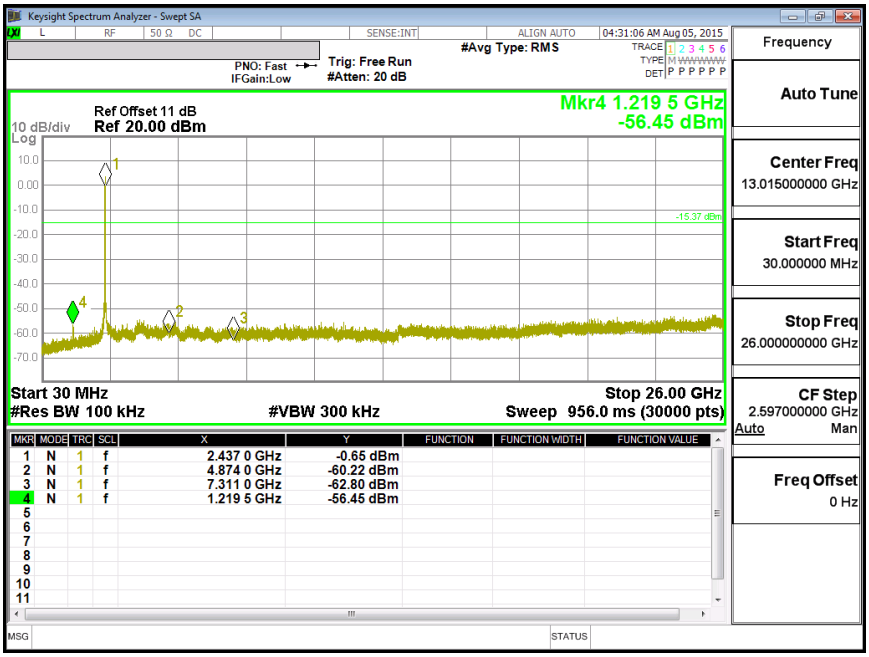


OUT-OF-BAND EMISSIONS

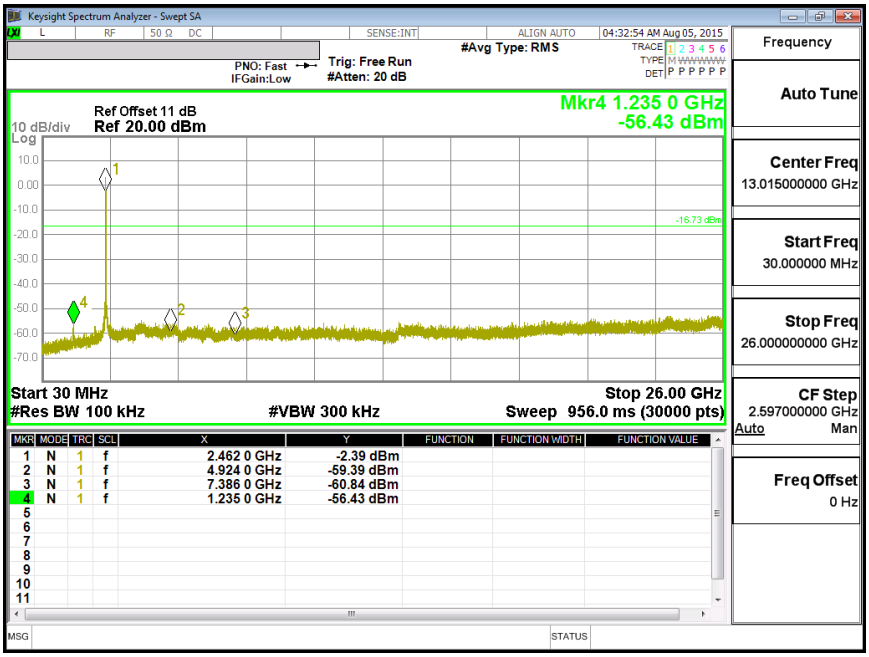
OUT OF BAND LOW CH



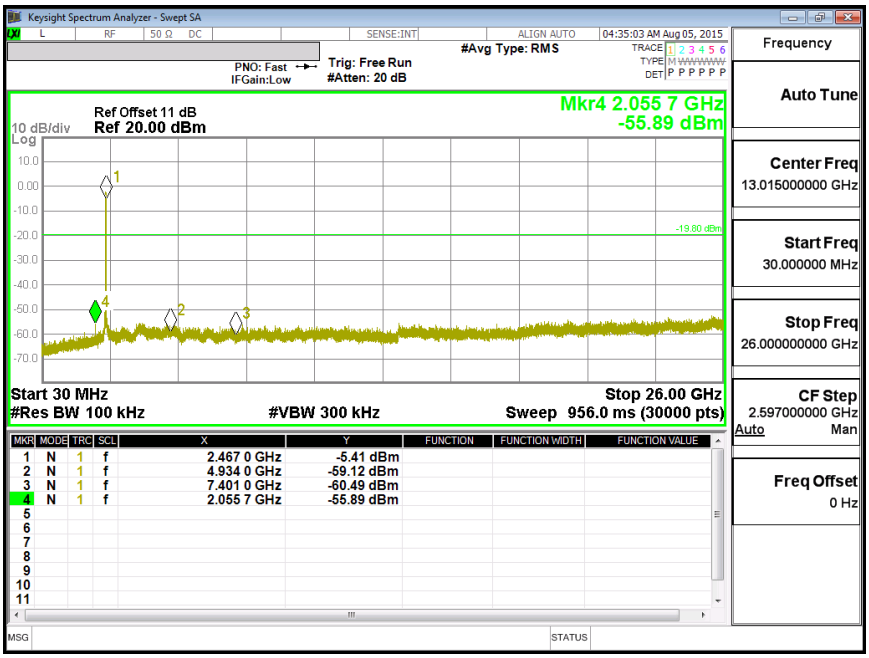
OUT OF BAND MID CH



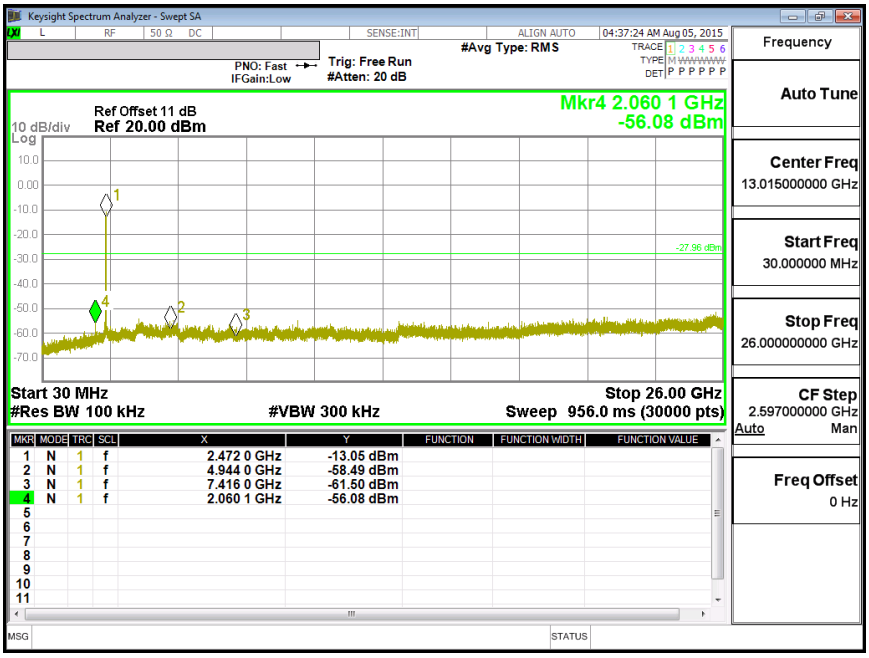
OUT OF BAND HIGH CH11



OUT OF BAND HIGH CH12



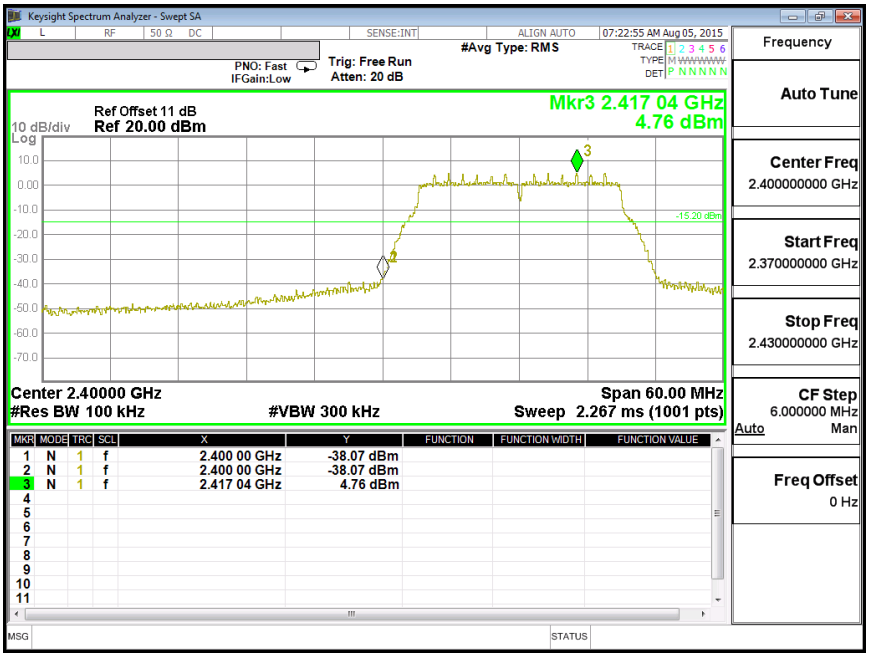
OUT OF BAND HIGH CH13



RESULTS for Chain 1

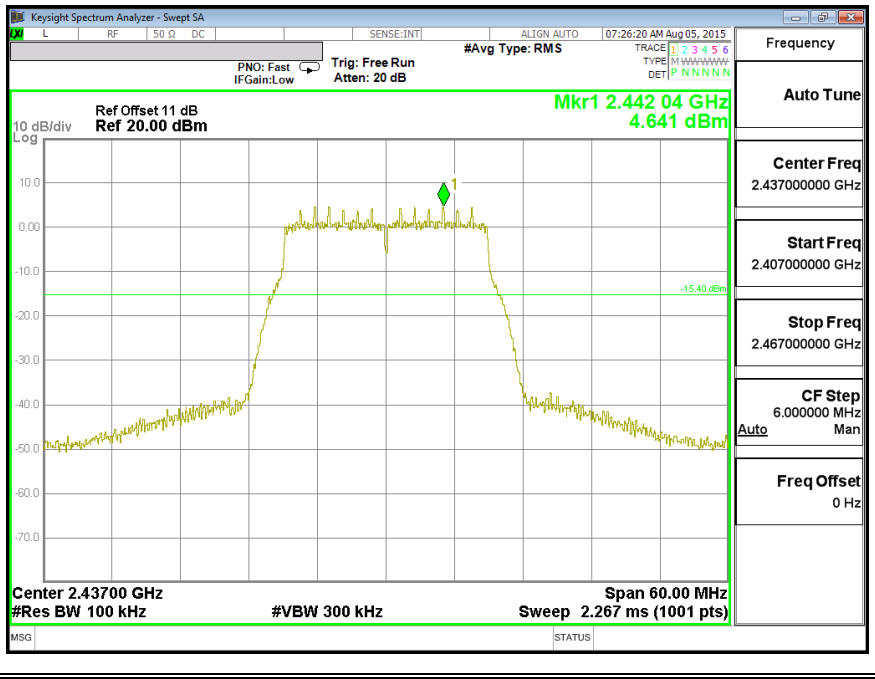
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



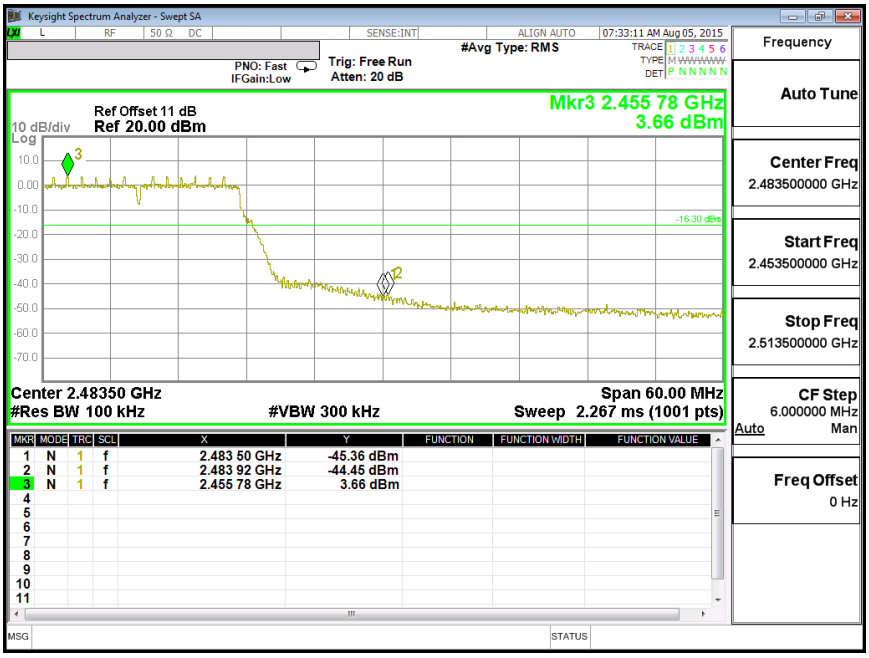
MID CHANNEL BANDEDGE

AUTHORIZED BAND EDGE MID CH

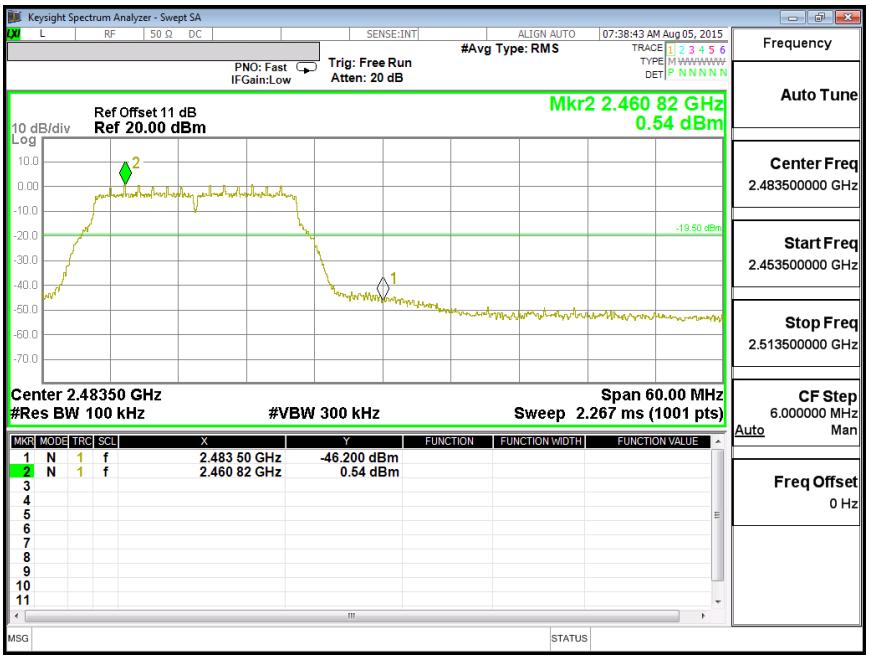


HIGH CHANNEL BANDEDGE

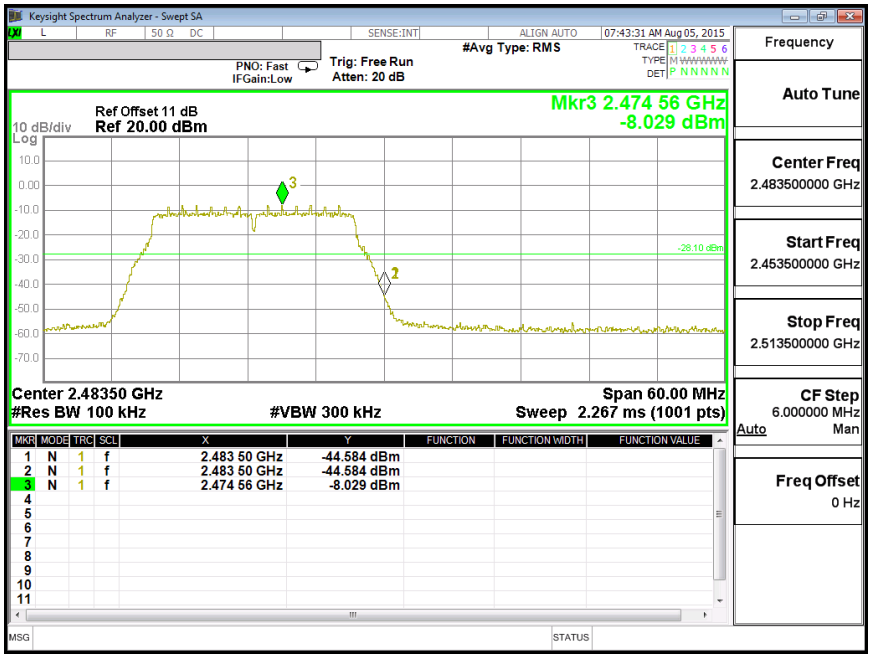
AUTHORIZED BAND EDGE HIGH CH11



AUTHORIZED BAND EDGE HIGH CH12

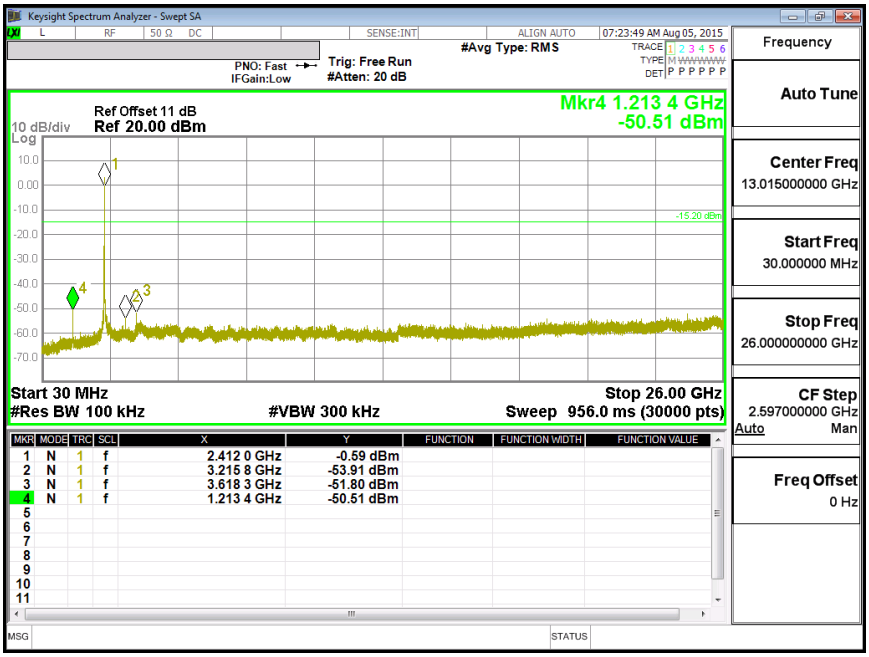


AUTHORIZED BAND EDGE HIGH CH13

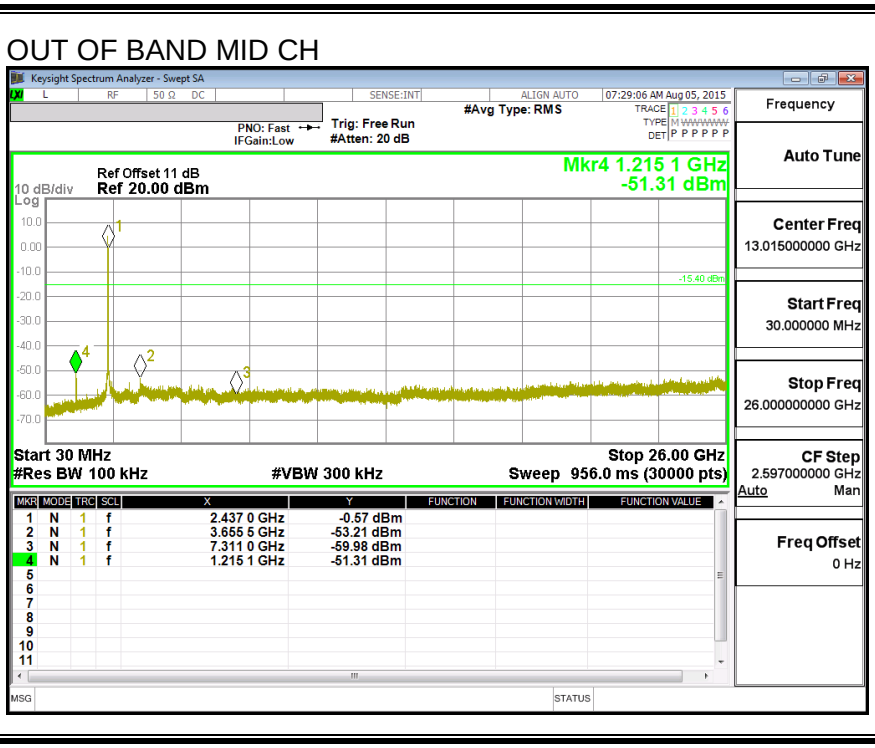


OUT-OF-BAND EMISSIONS

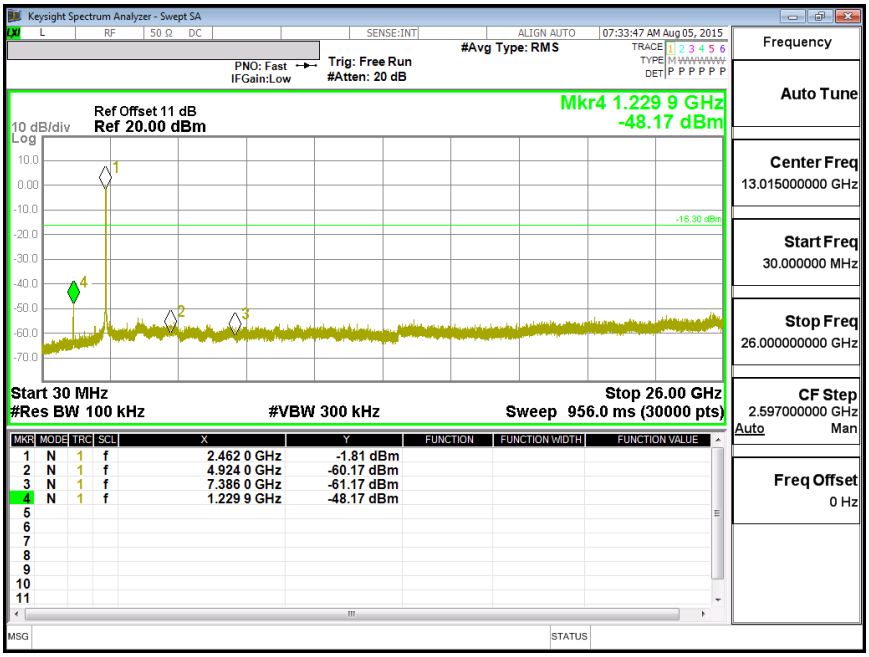
OUT OF BAND LOW CH



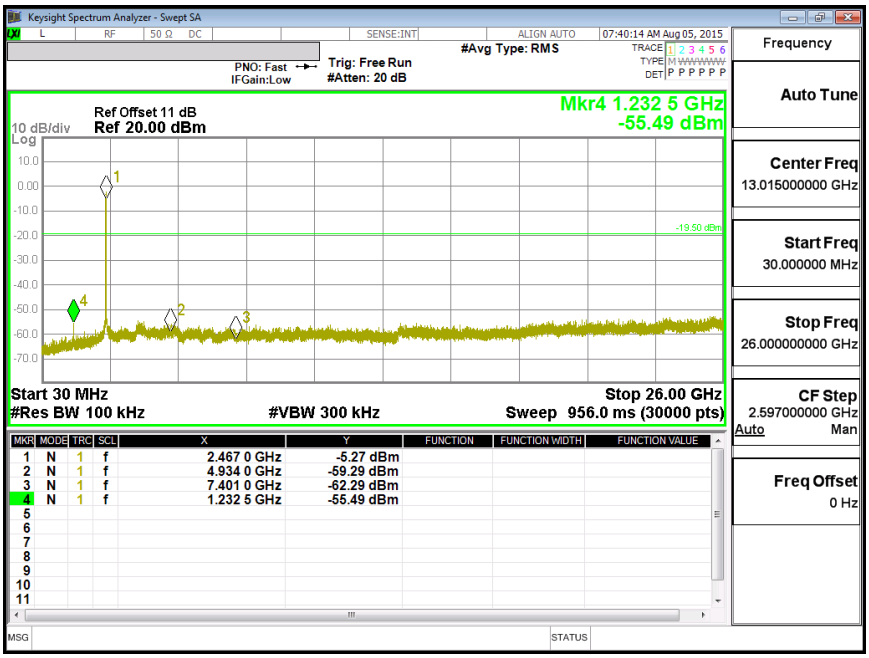
OUT OF BAND MID CH



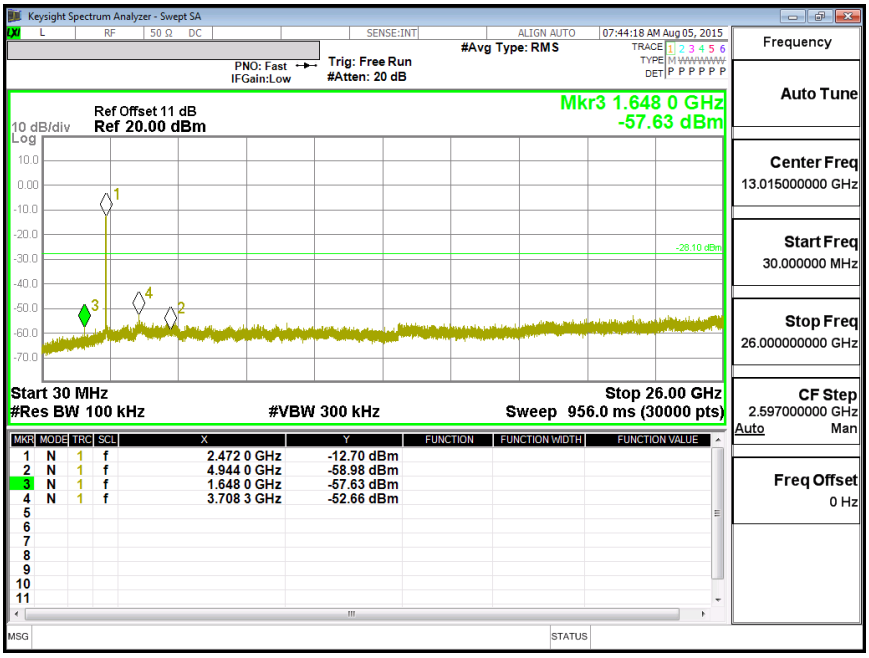
OUT OF BAND HIGH CH11



OUT OF BAND HIGH CH12



OUT OF BAND HIGH CH13



8.6. 802.11n HT20 2TX CDD MODE IN THE 2.4 GHz BAND

8.6.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (1)

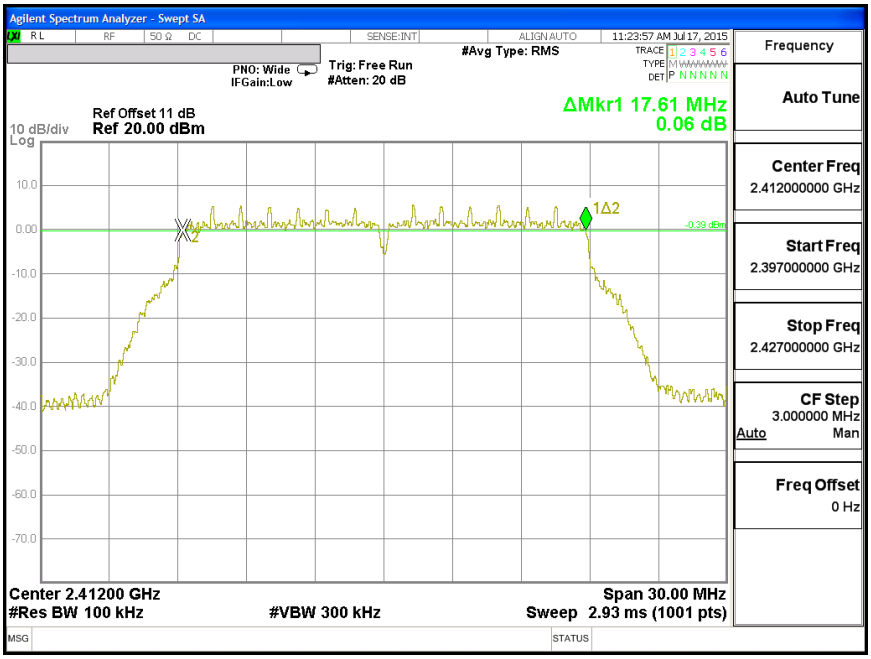
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

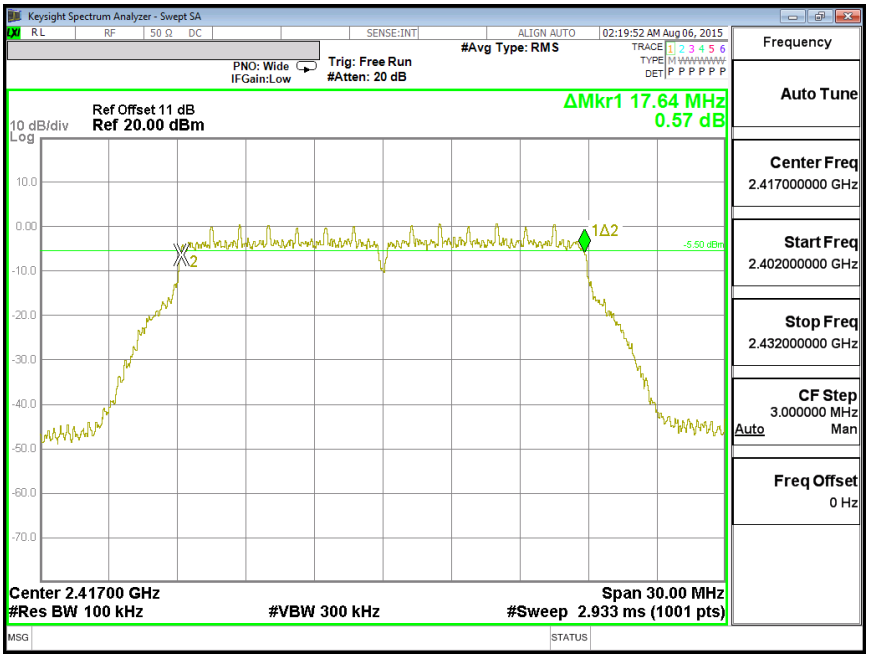
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low_1	2412	17.61	17.67	0.5
Low_2	2417	17.64	17.61	0.5
Mid	2437	17.67	17.67	0.5
High_10	2457	17.60	17.60	0.5
High_11	2462	17.61	17.64	0.5
High_12	2467	17.64	17.67	0.5
High_13	2472	17.67	17.67	0.5

6 dB BANDWIDTH, Chain 0

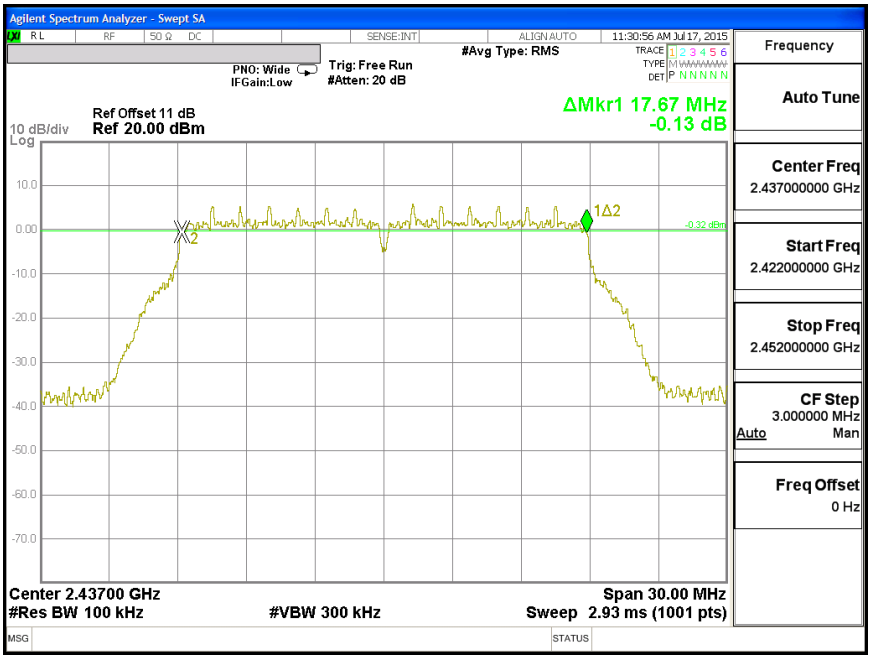
6 dB BANDWIDTH Chain 0 LOW CH1



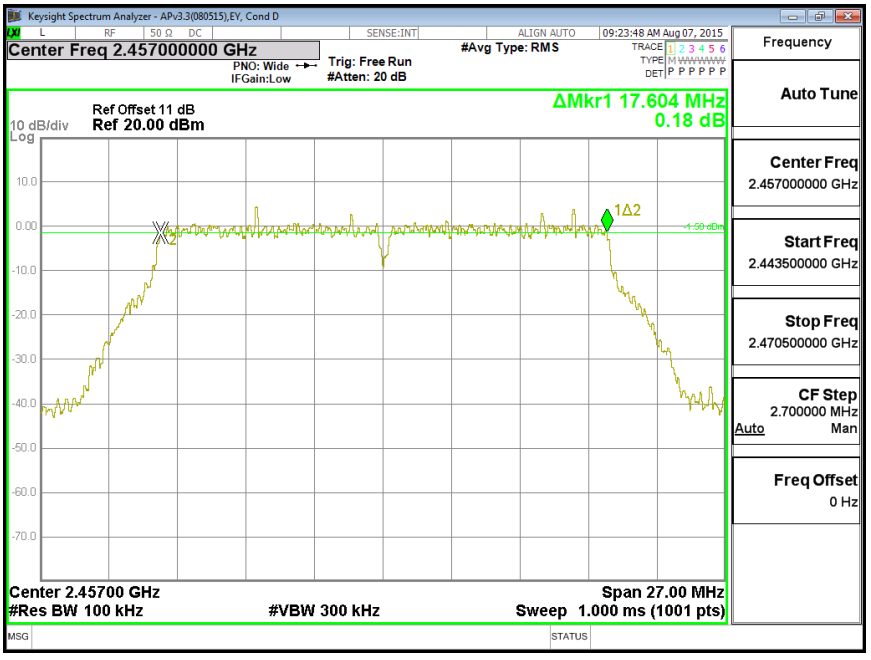
6 dB BANDWIDTH Chain 0 LOW CH2



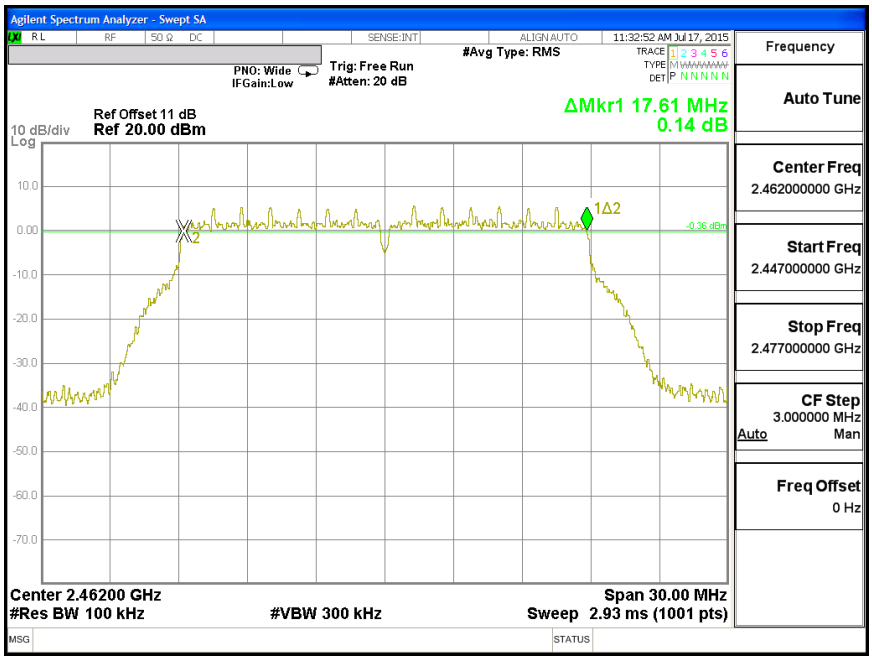
6 dB BANDWIDTH Chain 0 MID CH



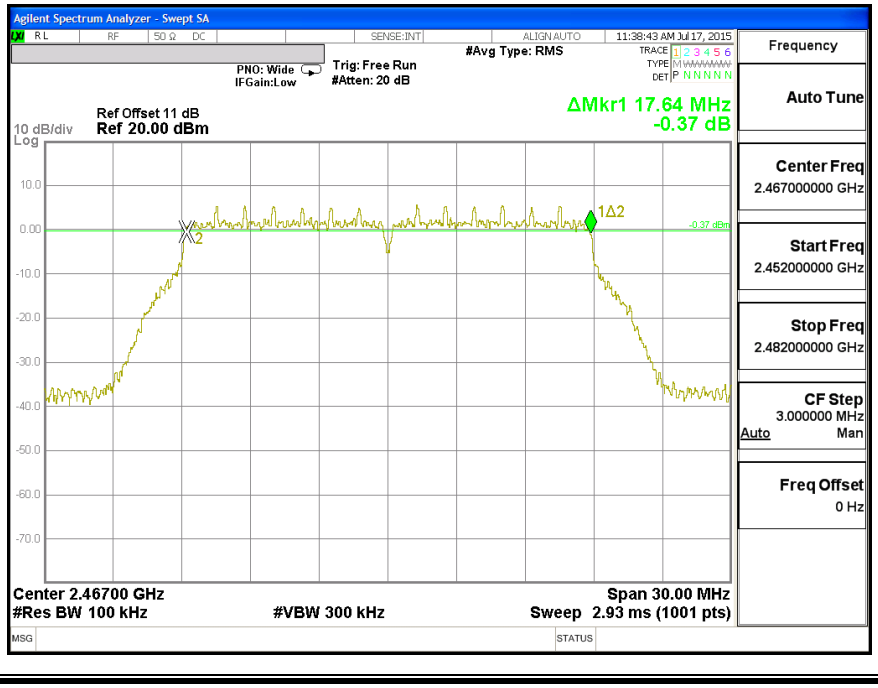
6 dB BANDWIDTH Chain 0 HIGH CH10



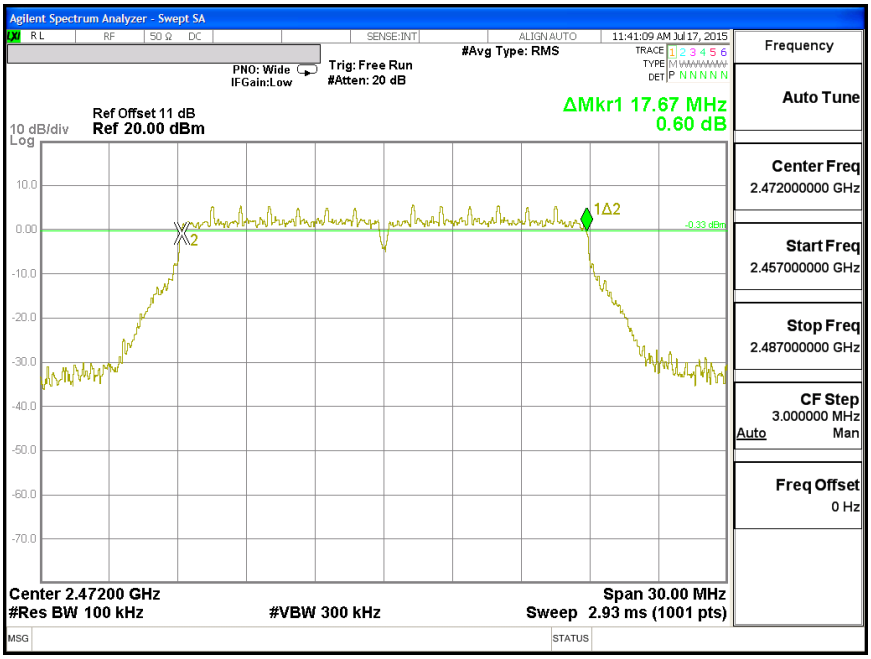
6 dB BANDWIDTH Chain 0 HIGH CH11



6 dB BANDWIDTH Chain 0 HIGH CH12

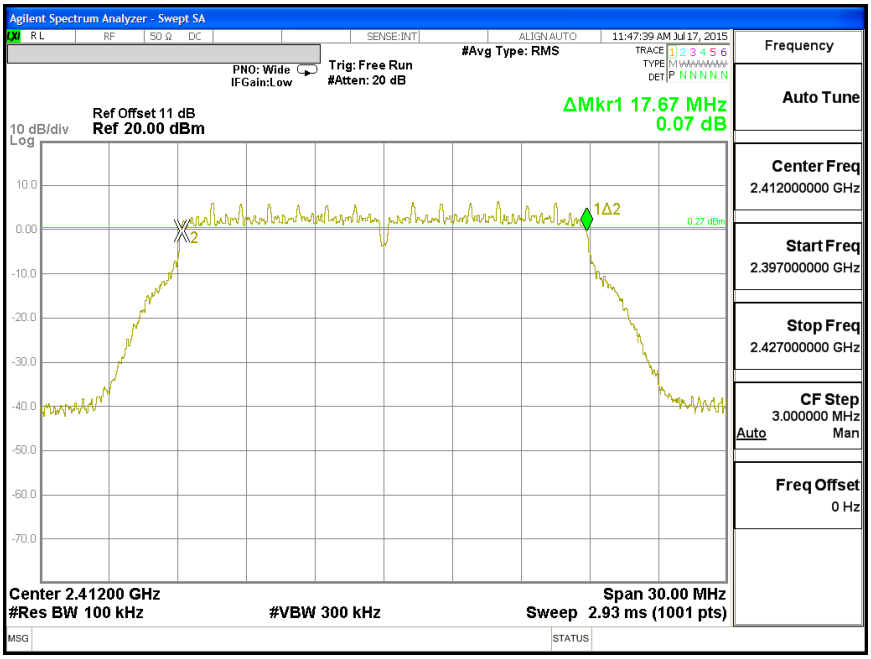


6 dB BANDWIDTH Chain 0 HIGH CH13

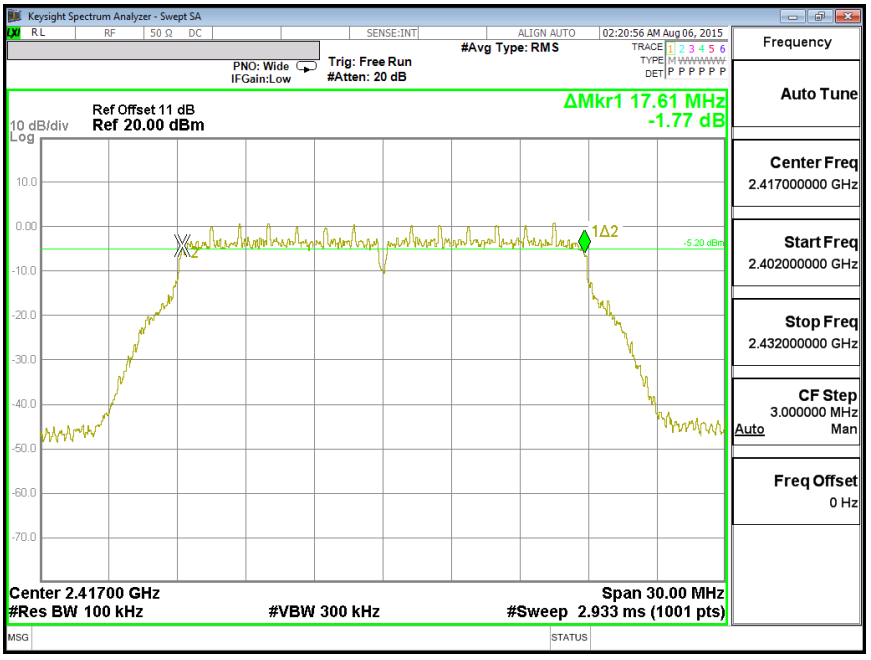


6 dB BANDWIDTH, Chain 1

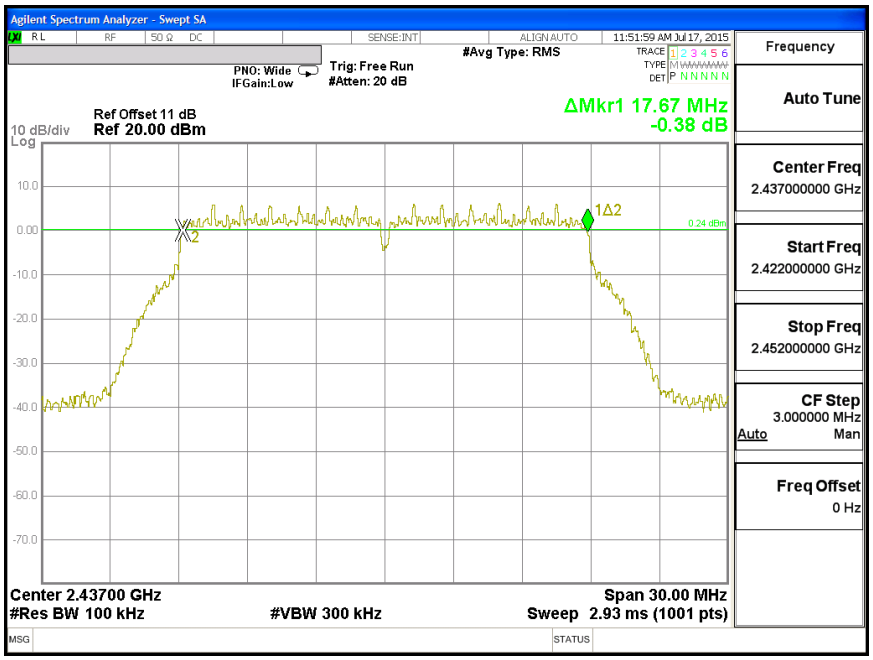
6 dB BANDWIDTH Chain 1 LOW CH1



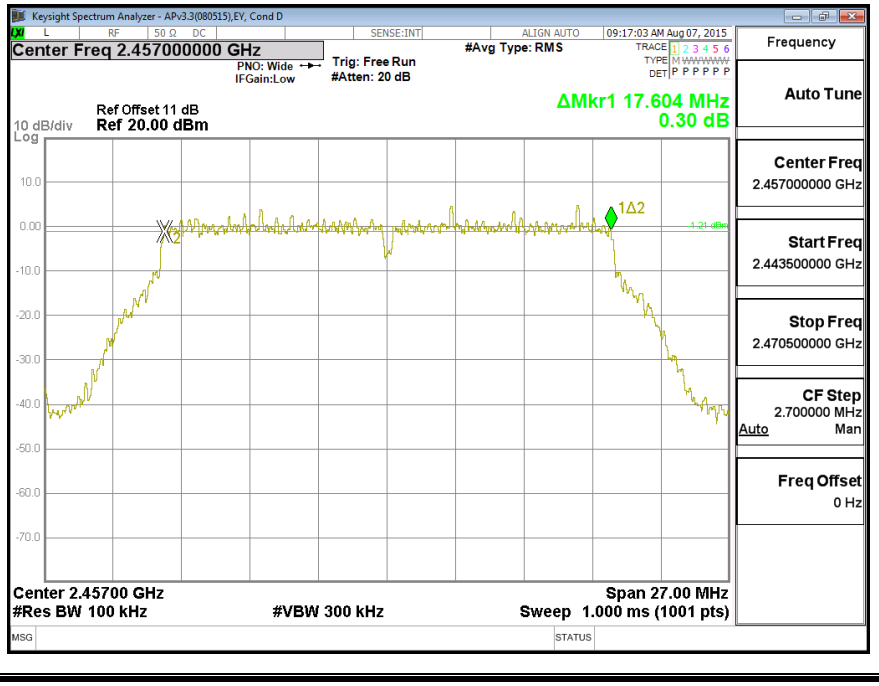
6 dB BANDWIDTH Chain 1 LOW CH2



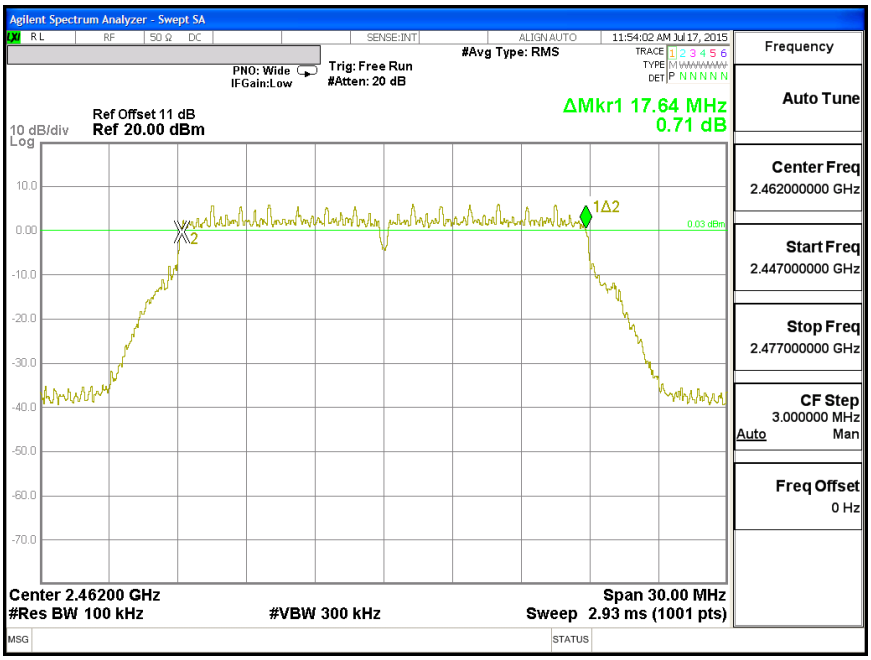
6 dB BANDWIDTH Chain 1 MID CH



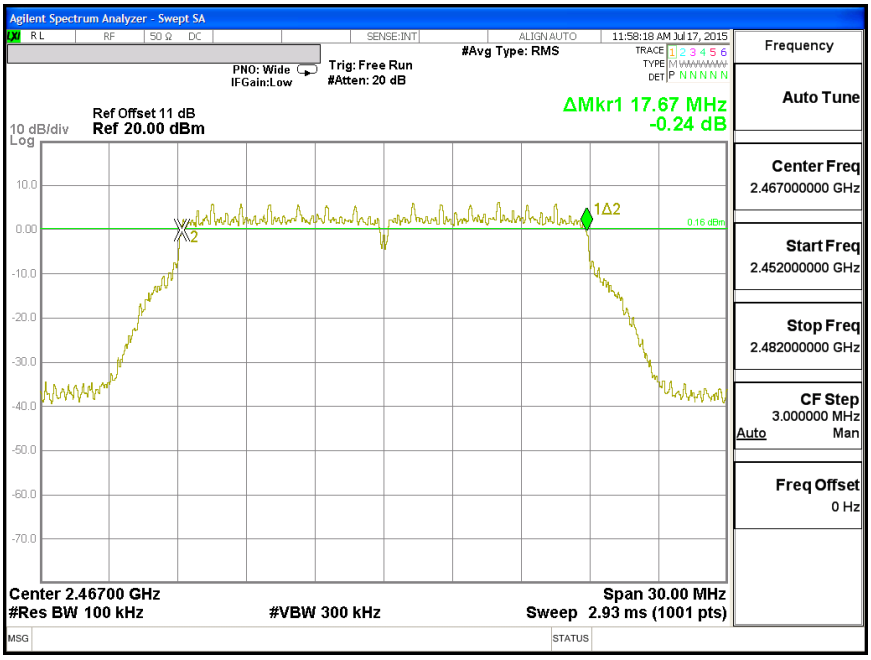
6 dB BANDWIDTH Chain 1 HIGH CH10



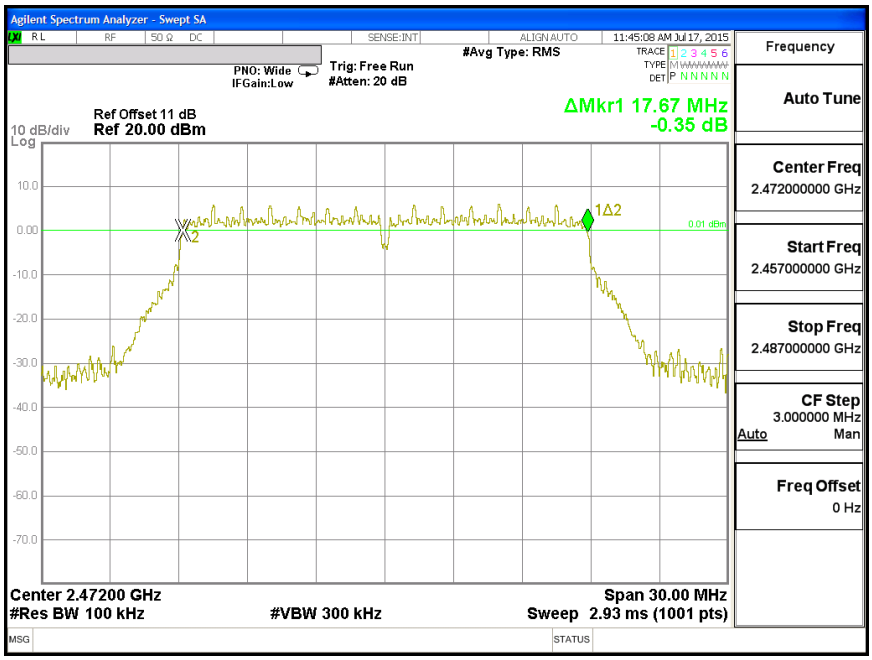
6 dB BANDWIDTH Chain 1 HIGH CH11



6 dB BANDWIDTH Chain 1 HIGH CH12



6 dB BANDWIDTH Chain 1 HIGH CH13



8.6.2. 99% BANDWIDTH

LIMITS

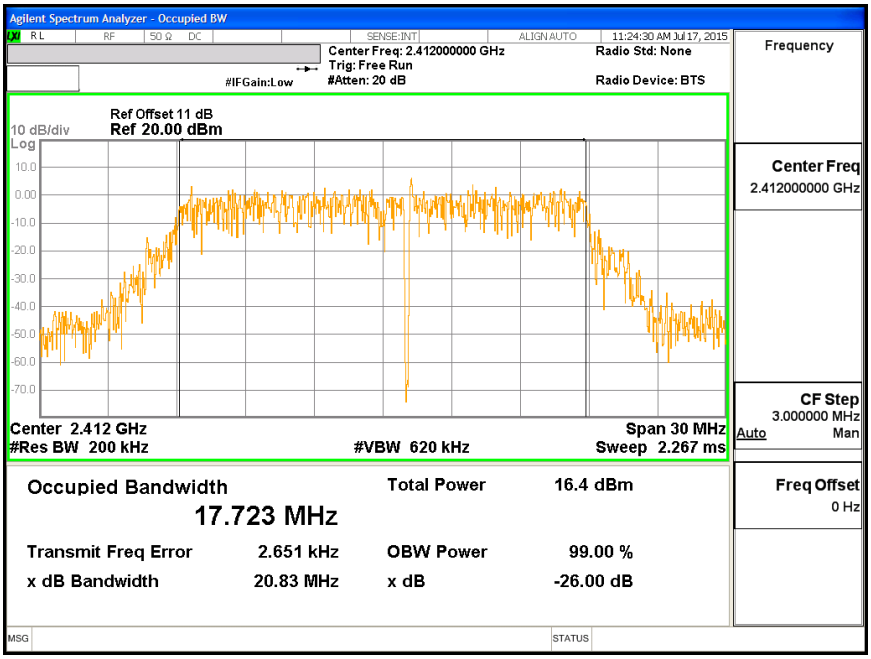
None; for reporting purposes only.

RESULTS

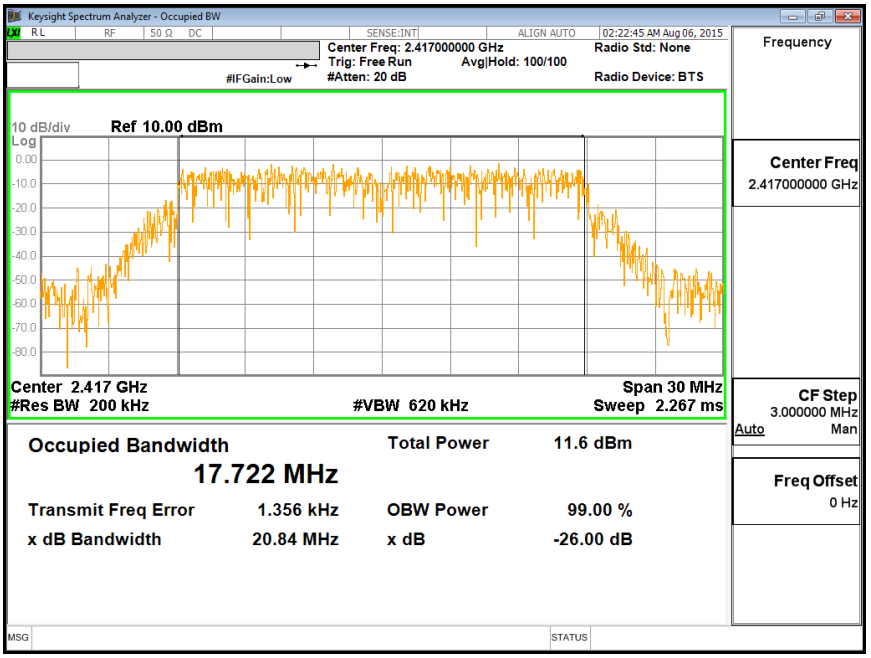
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low_1	2412	17.723	17.679
Low_2	2417	17.722	17.708
Mid	2437	17.793	17.705
High_11	2457	17.711	17.723
High_11	2462	17.747	17.726
High_12	2467	17.759	17.721
High_13	2472	17.744	17.772

99% BANDWIDTH, Chain 0

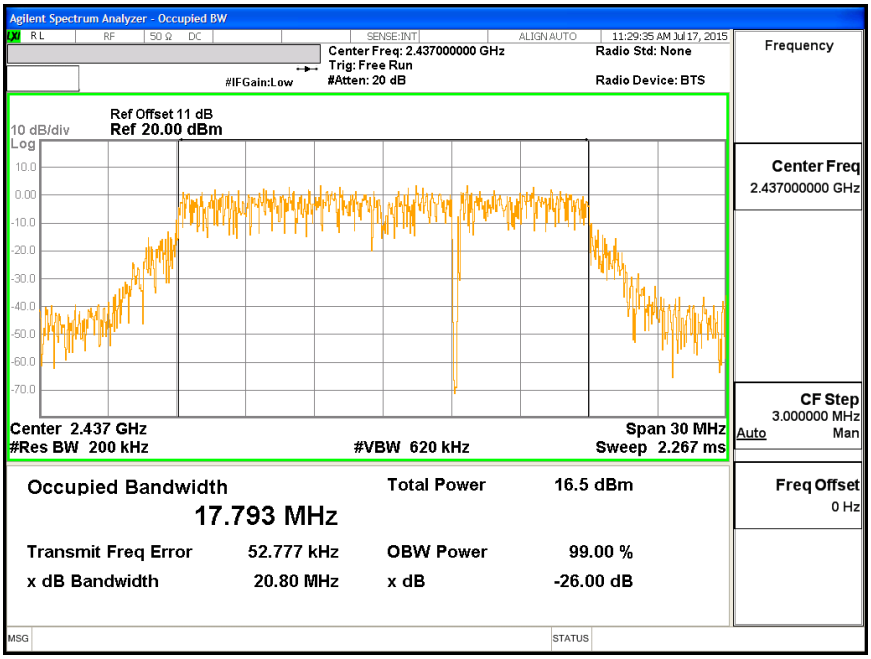
99% BANDWIDTH Chain 0 LOW CH1



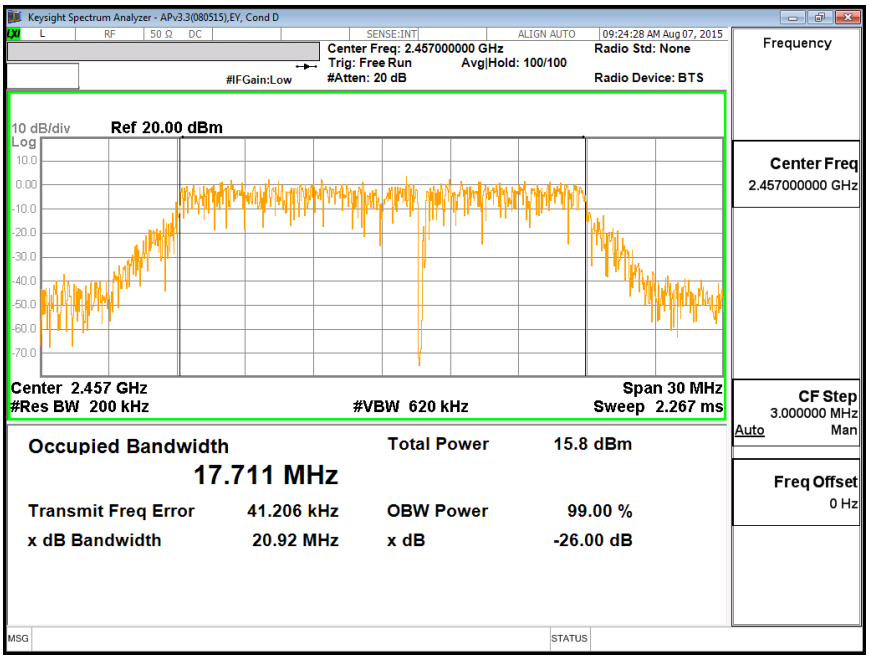
99% BANDWIDTH Chain 0 LOW CH2



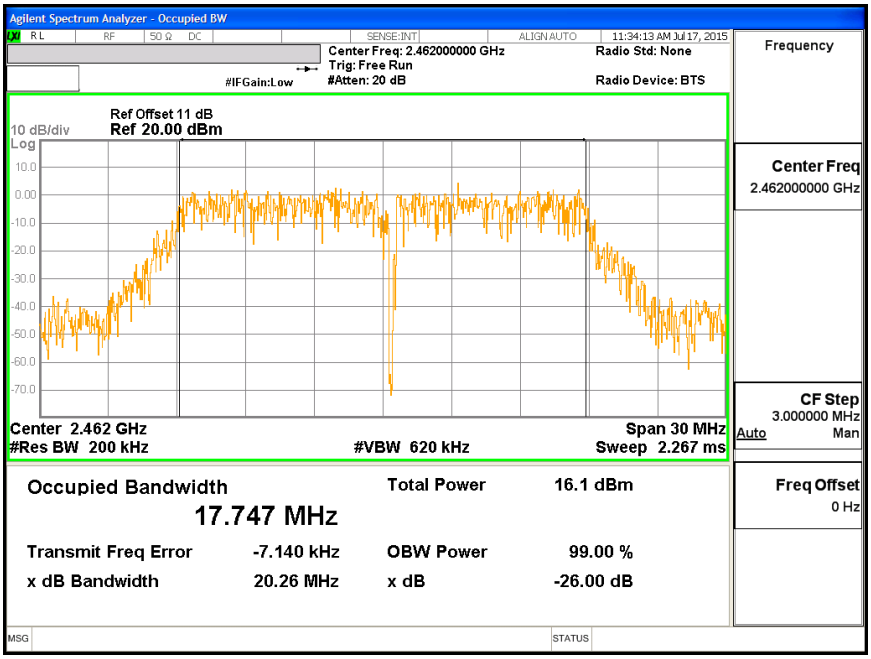
99% BANDWIDTH Chain 0 MID CH



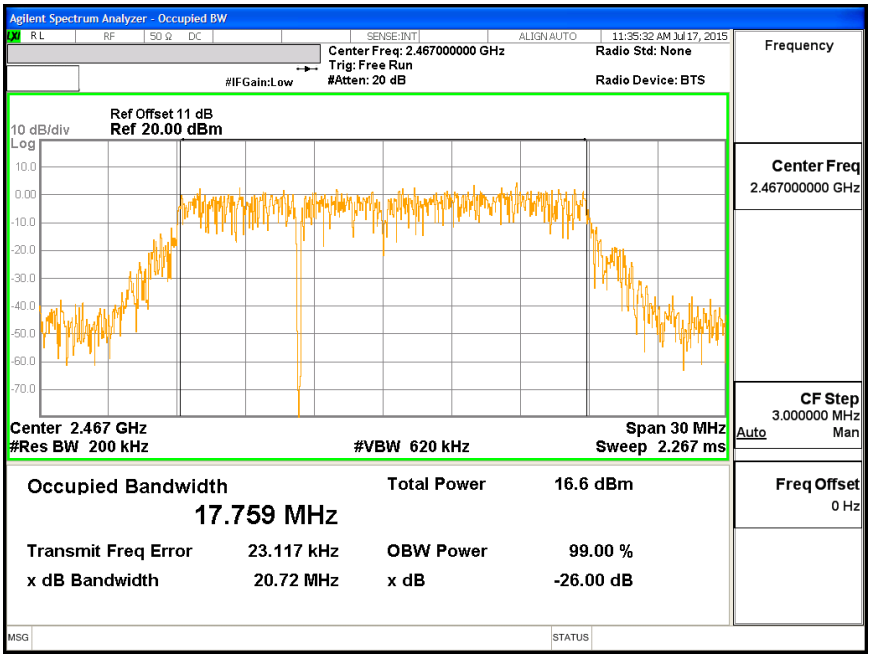
99% BANDWIDTH Chain 0 HIGH CH10



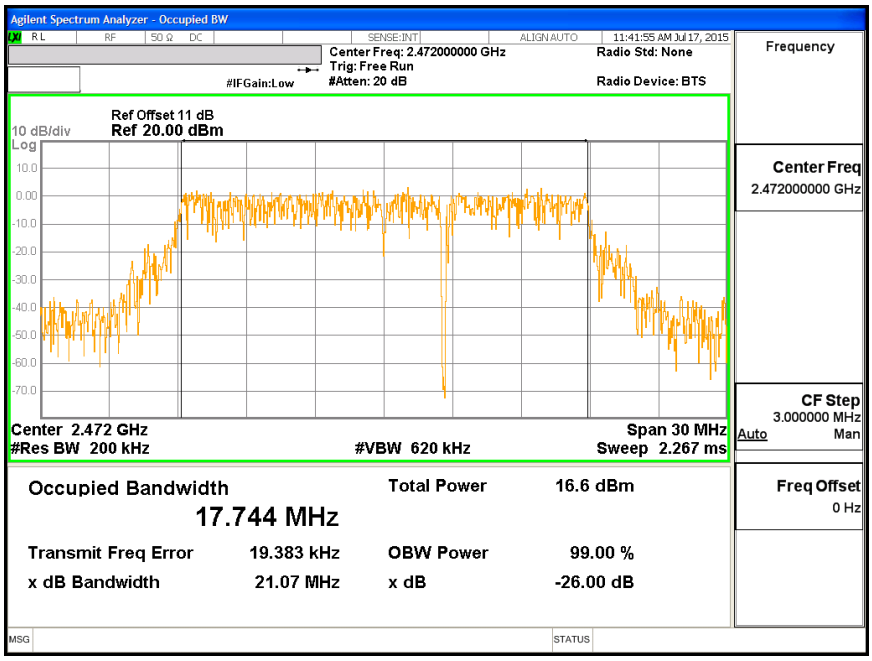
99% BANDWIDTH Chain 0 HIGH CH11



99% BANDWIDTH Chain 0 HIGH CH12

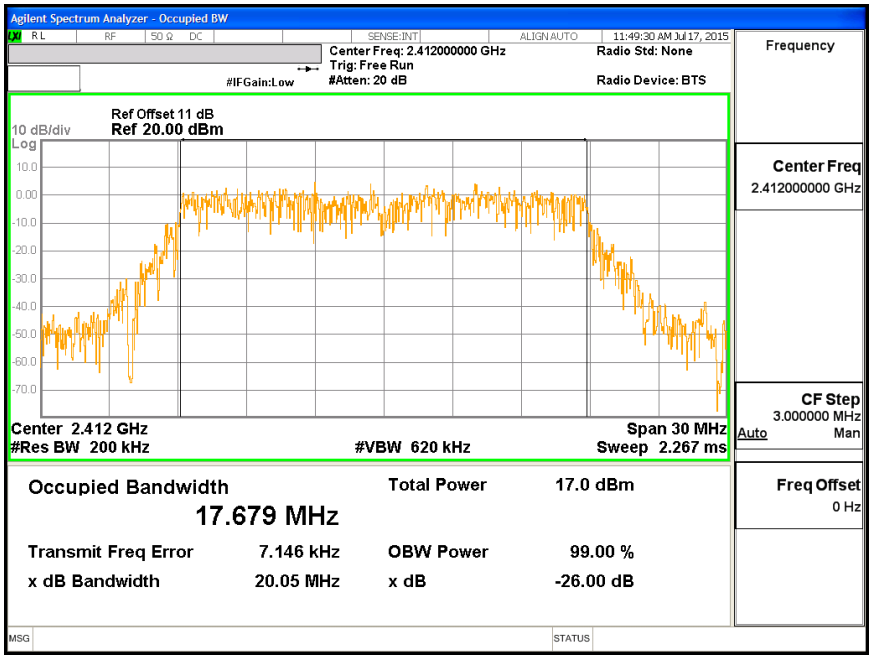


99% BANDWIDTH Chain 0 HIGH CH13

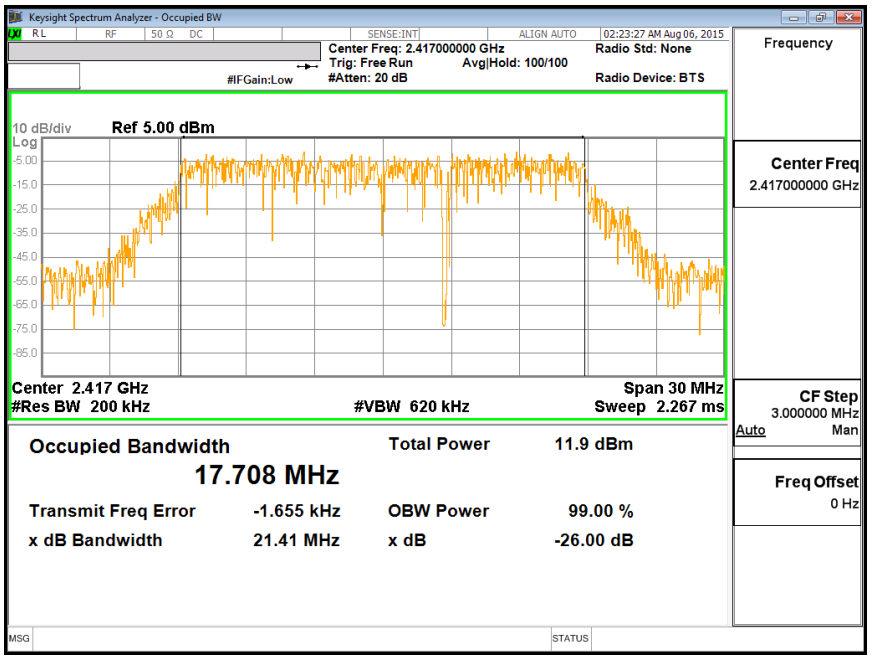


99% BANDWIDTH, Chain 1

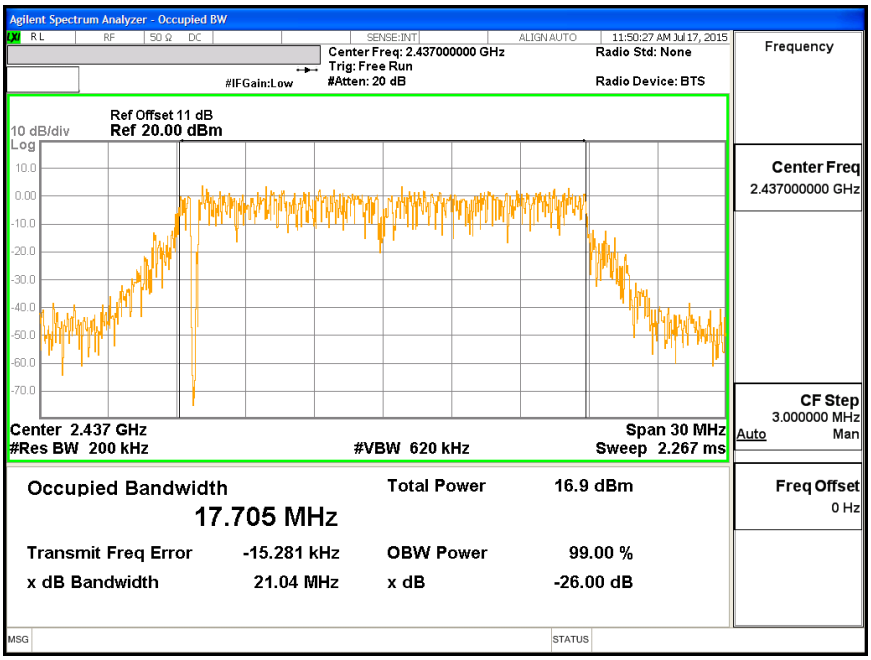
99% BANDWIDTH Chain 1 LOW CH



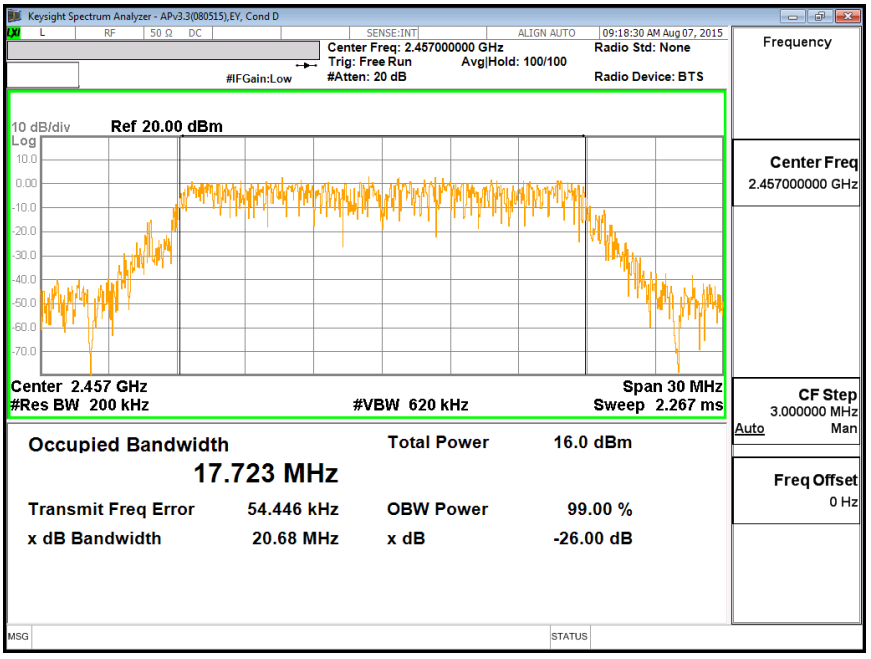
99% BANDWIDTH Chain 1 LOW CH2



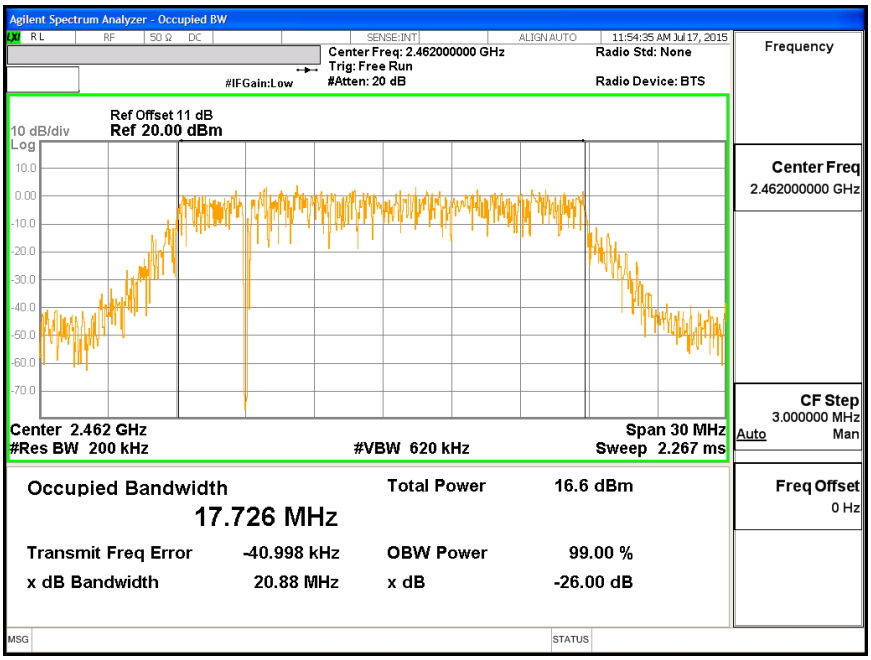
99% BANDWIDTH Chain 1 MID CH



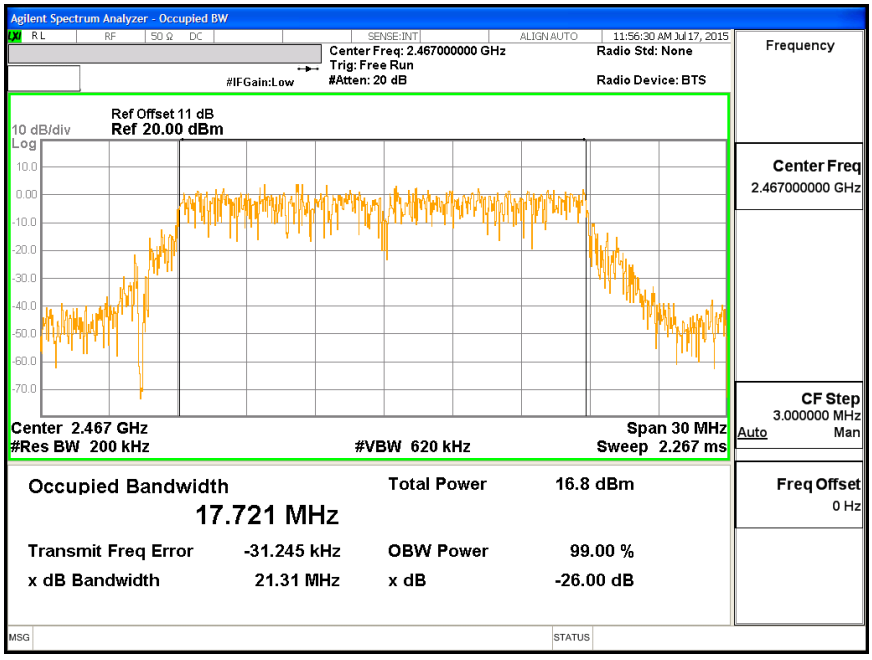
99% BANDWIDTH Chain 1 HIGH CH10



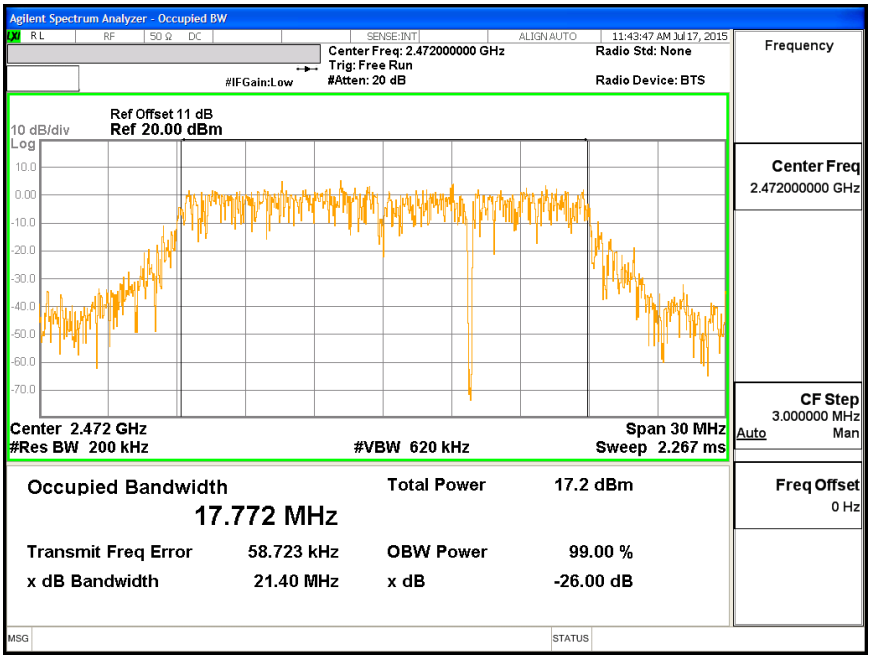
99% BANDWIDTH Chain 1 HIGH CH11



99% BANDWIDTH Chain 1 HIGH CH12



99% BANDWIDTH Chain 1 HIGH CH13



8.6.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low_1	2412	13.83	13.90	16.88
Low_2	2417	15.94	15.92	18.94
Mid	2437	15.99	15.91	18.96
High_10	2457	15.83	15.92	18.89
High_11	2462	13.87	13.91	16.90
High_12	2467	9.87	9.93	12.91
High_13	2472	2.49	2.45	5.48

8.6.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 (5.4) (4)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.60	-0.50	-0.55

RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low_1	2412	-0.55	30.00	30	36	30.00
Low_2	2417	-0.55	30.00	30	36	30.00
Mid	2437	-0.55	30.00	30	36	30.00
High_11	2462	-0.55	30.00	30	36	30.00
High_12	2467	-0.55	30.00	30	36	30.00
High_13	2472	-0.55	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low_1	2412	21.05	21.51	24.30	30.00	-5.70
Low_2	2417	23.16	23.11	26.15	30.00	-3.85
Mid	2437	23.23	23.18	26.22	30.00	-3.78
High_10	2457	23.12	23.18	26.16	30.00	-3.84
High_11	2462	21.11	21.15	24.14	30.00	-5.86
High_12	2467	17.13	17.27	20.21	30.00	-9.79
High_13	2472	9.76	9.68	12.73	30.00	-17.27

8.6.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (2)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS

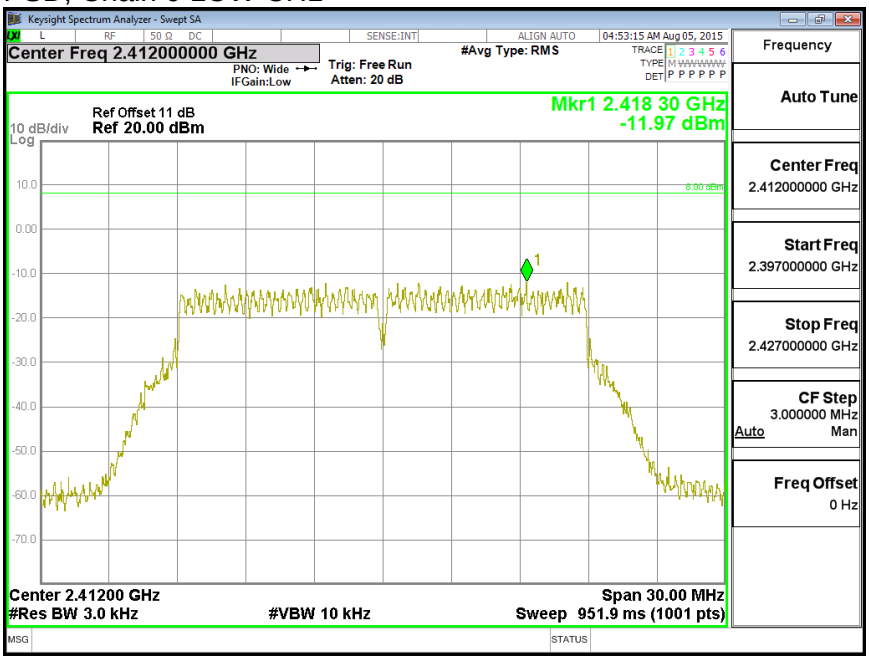
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

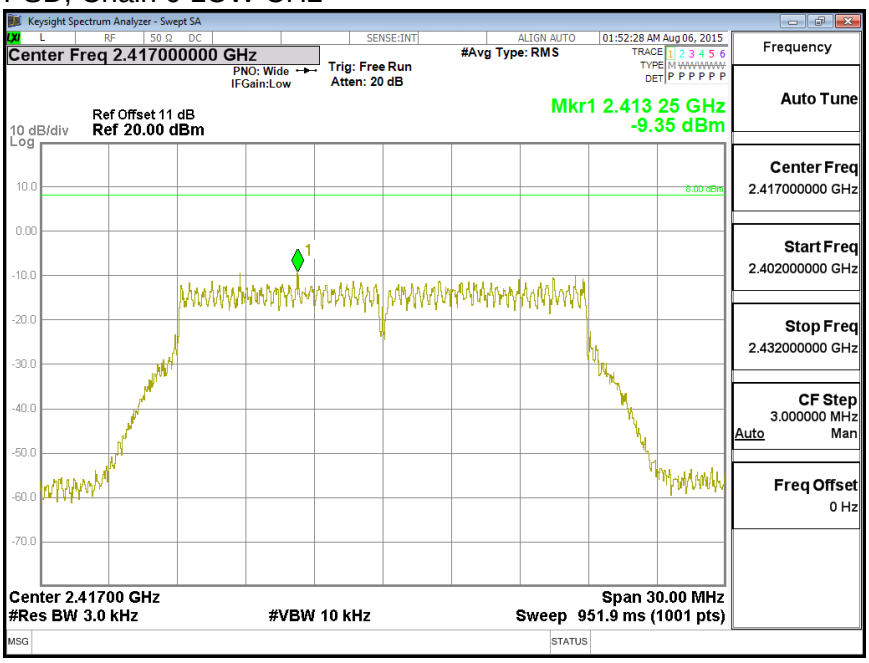
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low_1	2412	-11.97	-11.76	-8.85	8.0	-16.9
Low_2	2417	-9.35	-9.75	-6.54	8.0	-14.5
Mid	2437	-9.37	-9.34	-6.34	8.0	-14.3
High_10	2457	-9.56	-9.47	-6.50	8.0	-14.5
High_11	2462	-10.84	-10.74	-7.78	8.0	-15.8
High_12	2467	-15.99	-15.54	-12.75	8.0	-20.7
High_13	2472	-23.08	-23.56	-20.30	8.0	-28.3

PSD, Chain 0

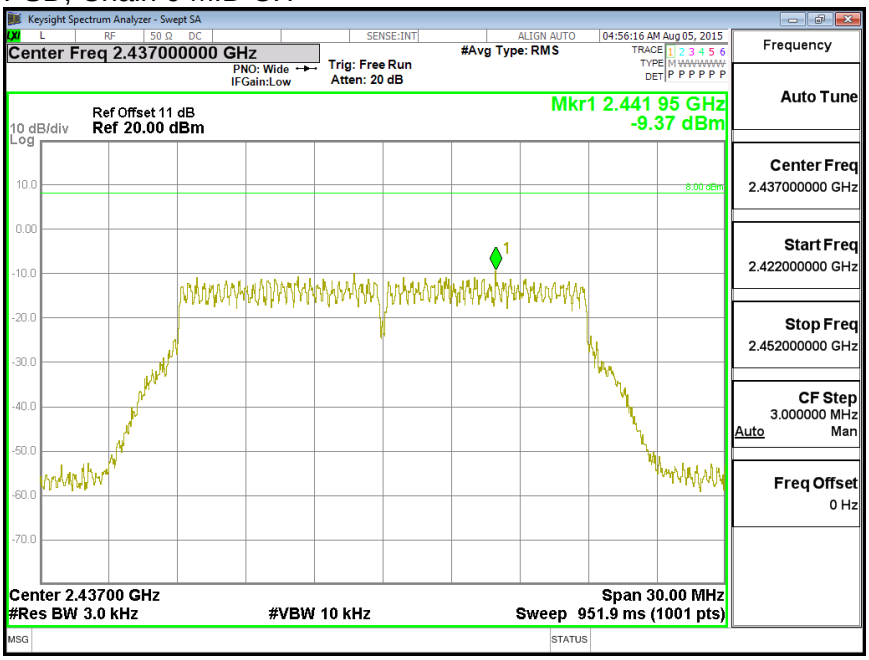
PSD, Chain 0 LOW CH1



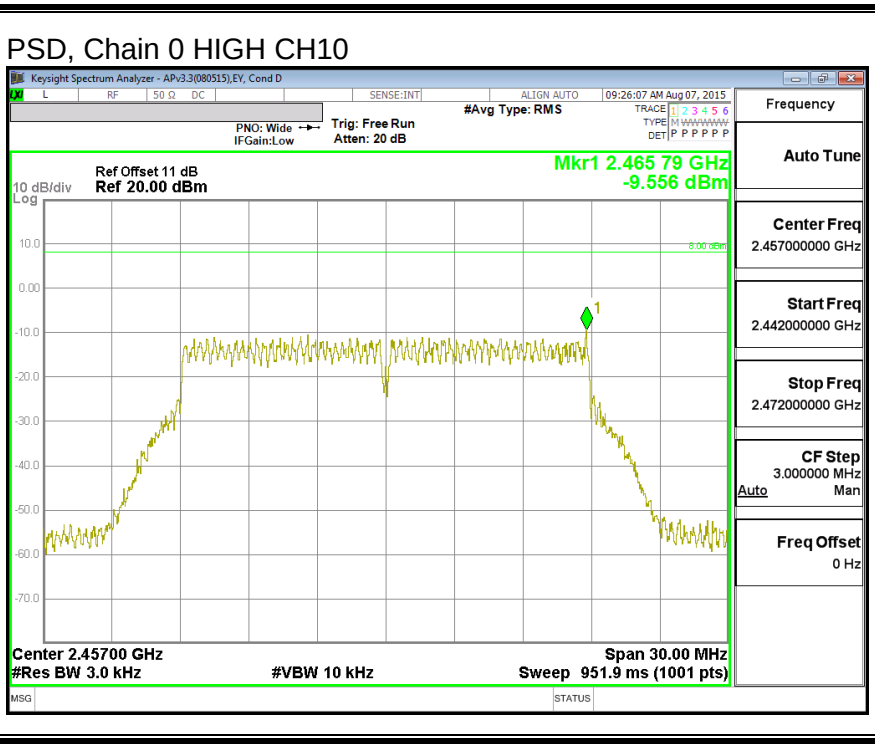
PSD, Chain 0 LOW CH2



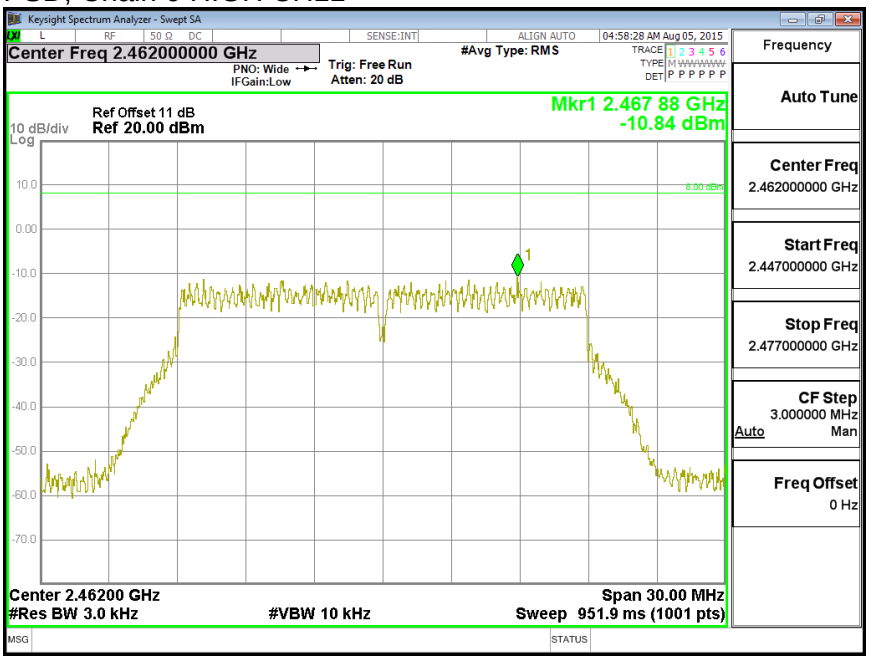
PSD, Chain 0 MID CH



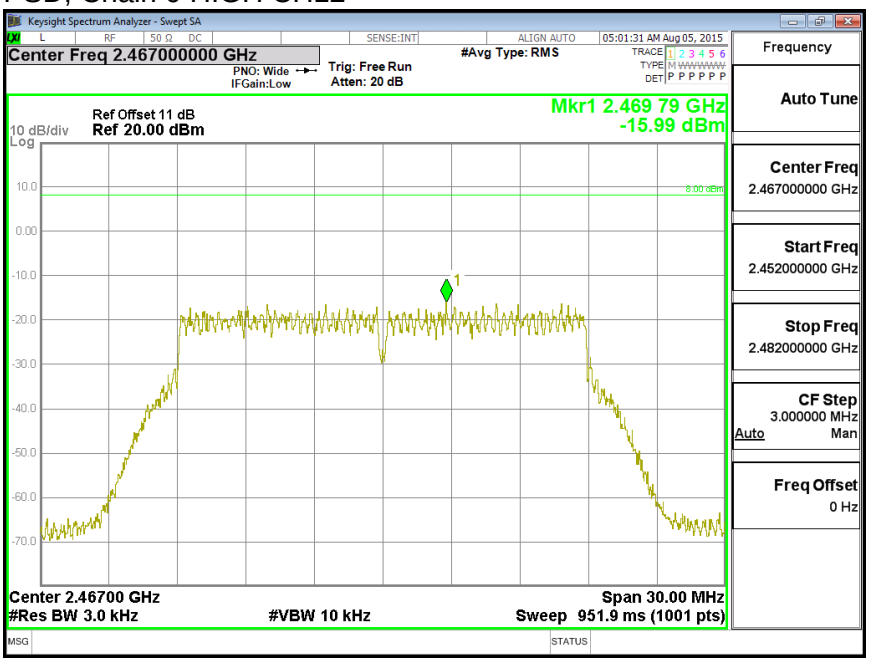
PSD, Chain 0 HIGH CH10



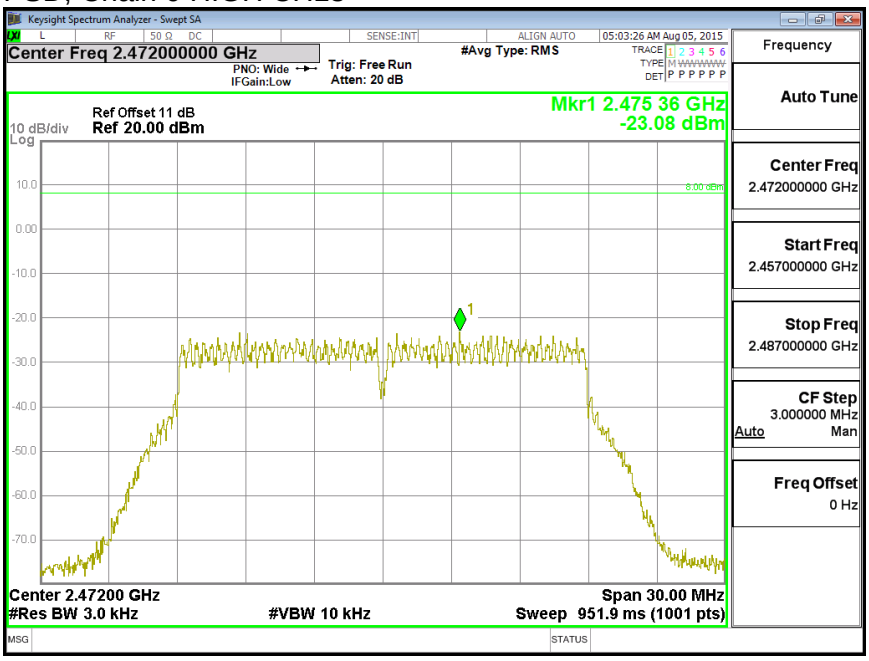
PSD, Chain 0 HIGH CH11



PSD, Chain 0 HIGH CH12

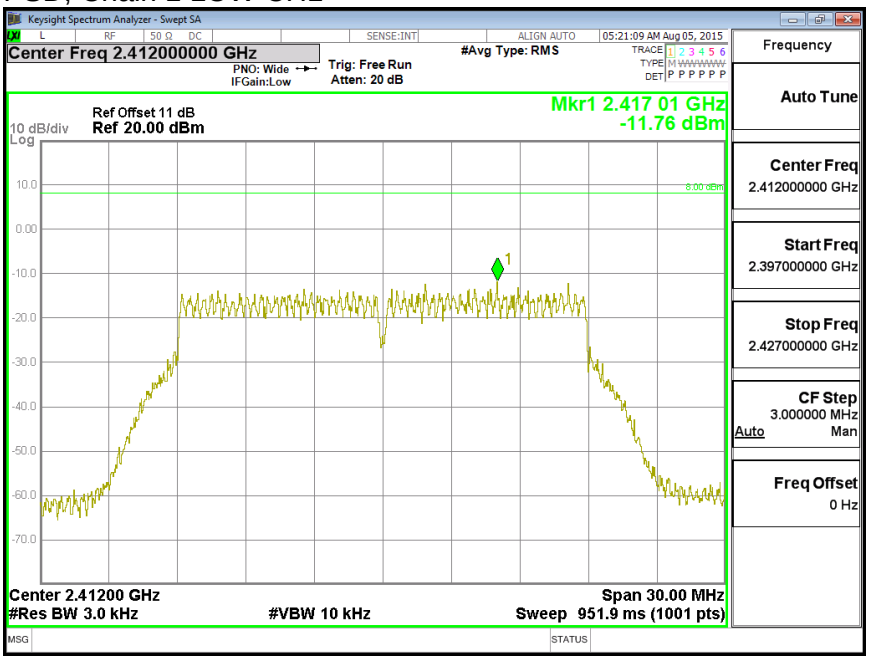


PSD, Chain 0 HIGH CH13

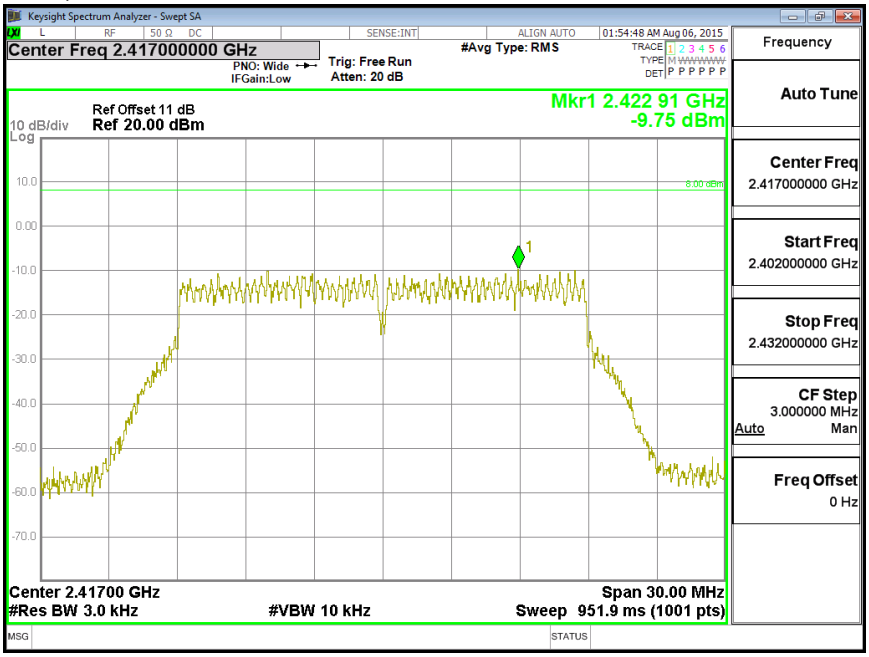


PSD, Chain 1

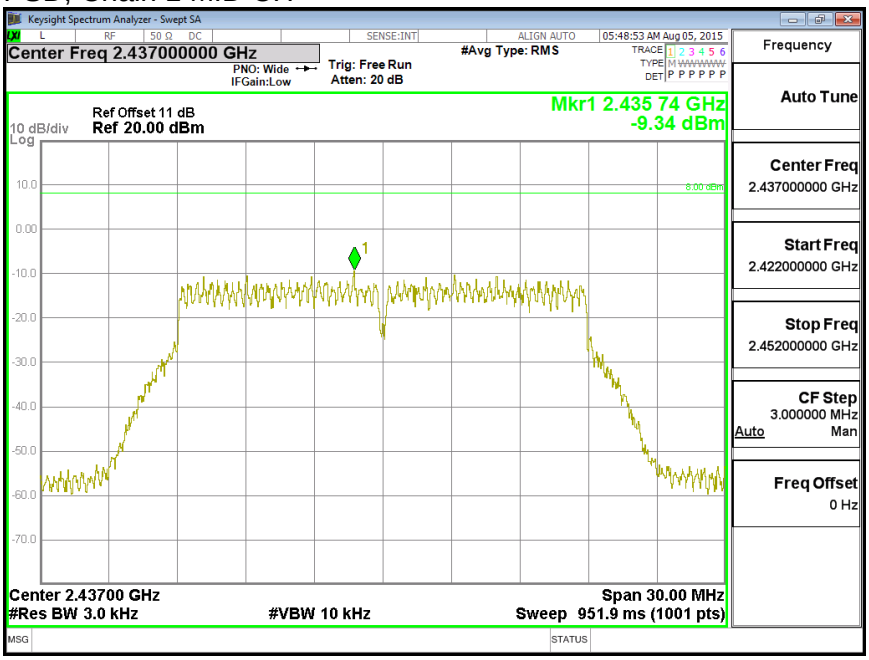
PSD, Chain 1 LOW CH1



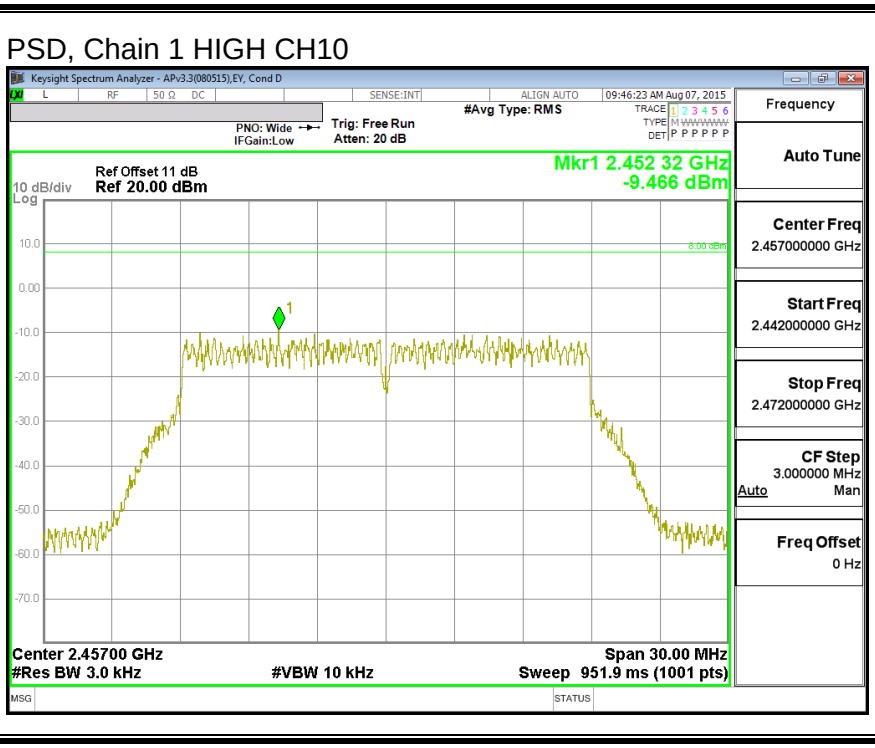
PSD, Chain 1 LOW CH2



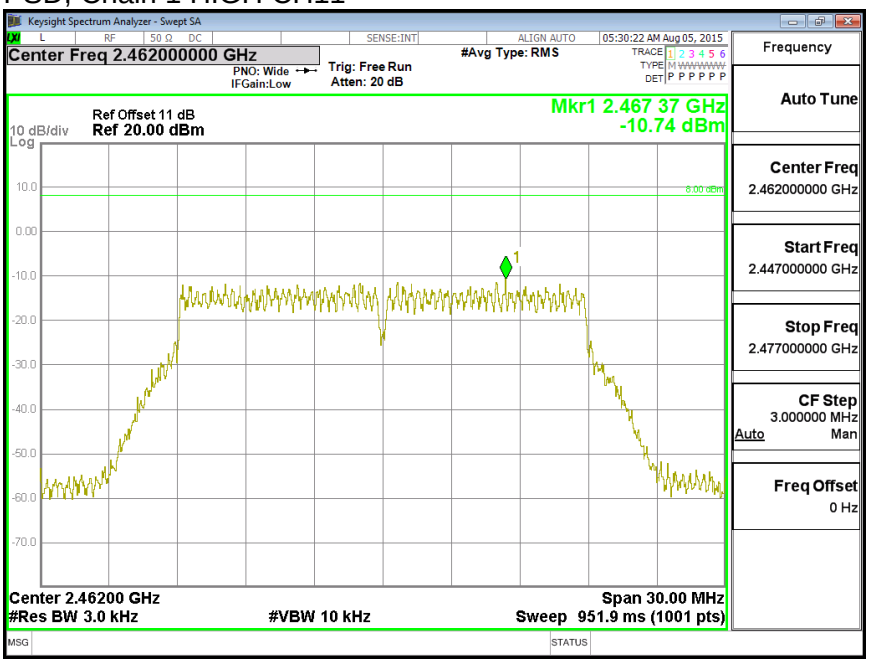
PSD, Chain 1 MID CH



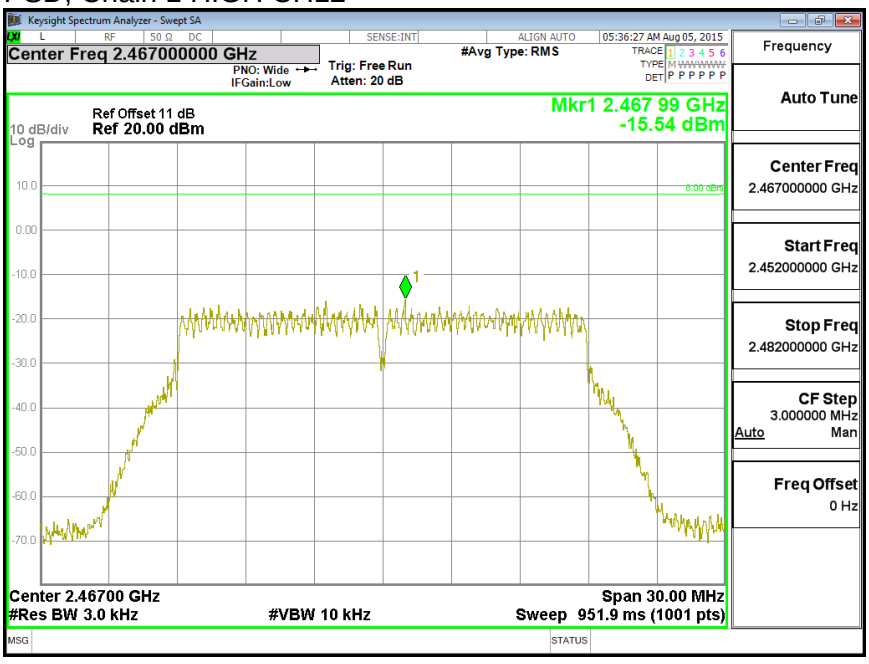
PSD, Chain 1 HIGH CH10



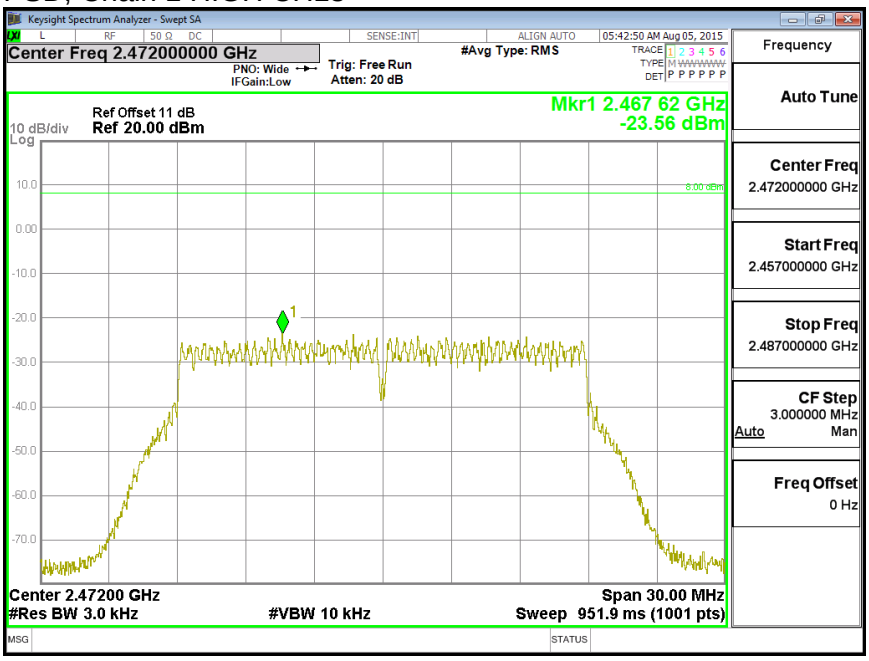
PSD, Chain 1 HIGH CH11



PSD, Chain 1 HIGH CH12



PSD, Chain 1 HIGH CH13



8.6.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

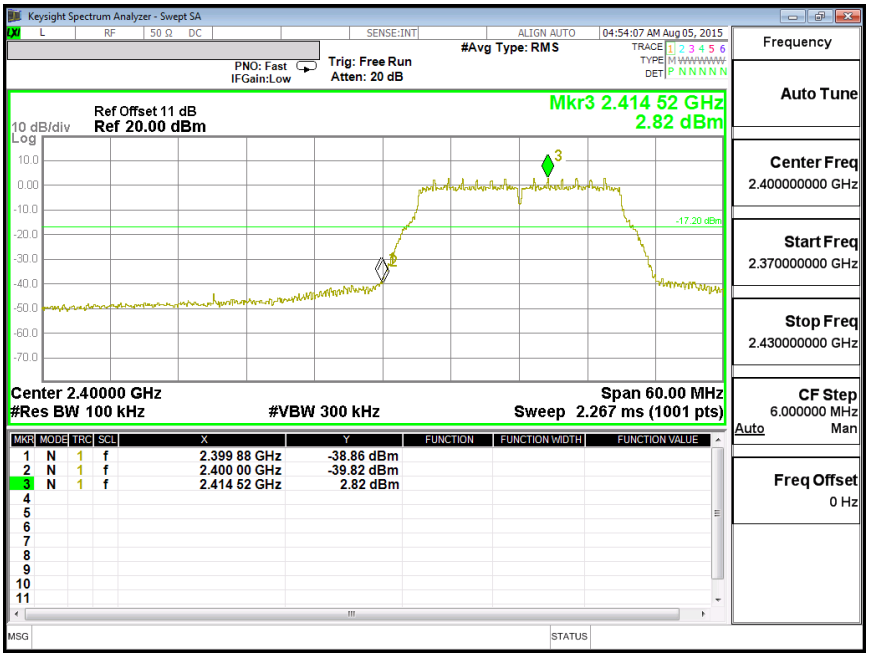
IC RSS-247 (5.5)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

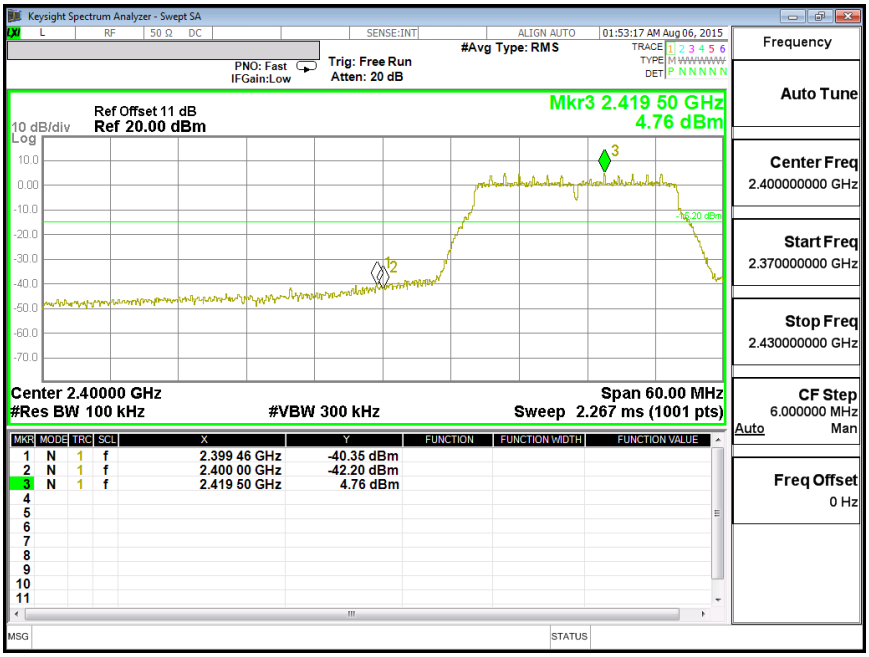
RESULTS

LOW CHANNEL BANDEDGE, Chain 0

AUTHORIZED BAND EDGE Chain 0 LOW CH1

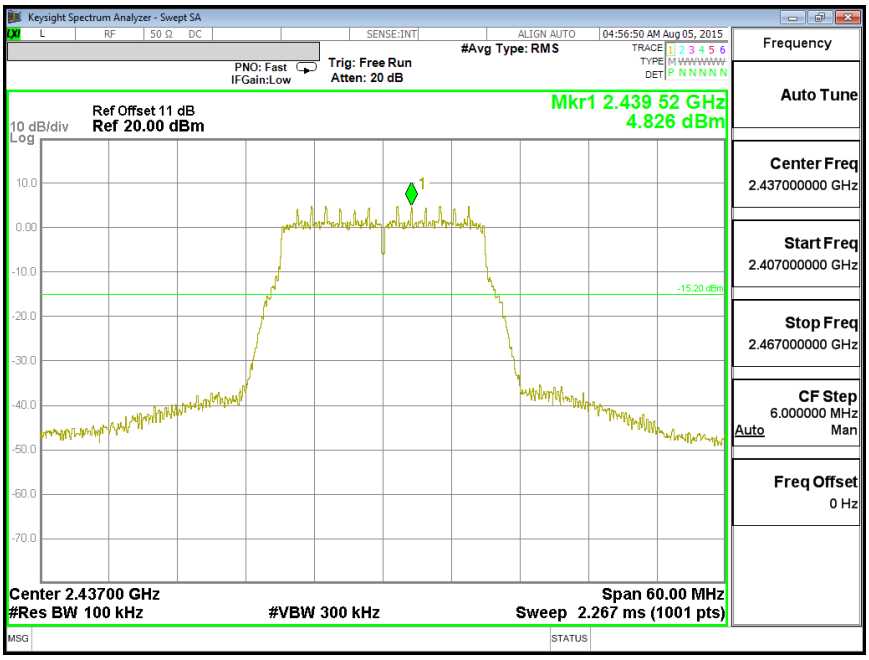


AUTHORIZED BAND EDGE Chain 0 LOW CH2



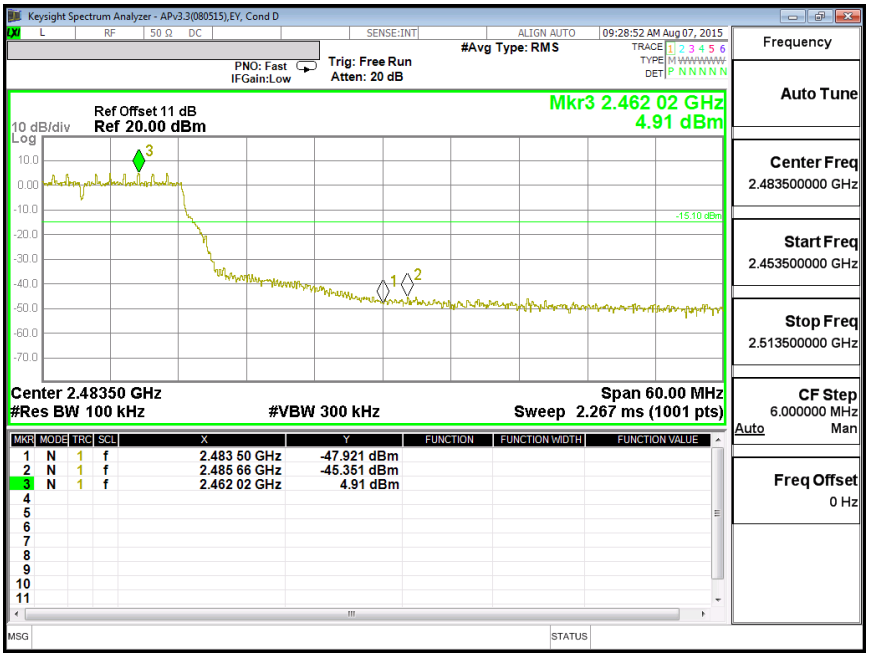
MID CHANNEL BANDEDGE

AUTHORIZED BAND EDGE MID CH

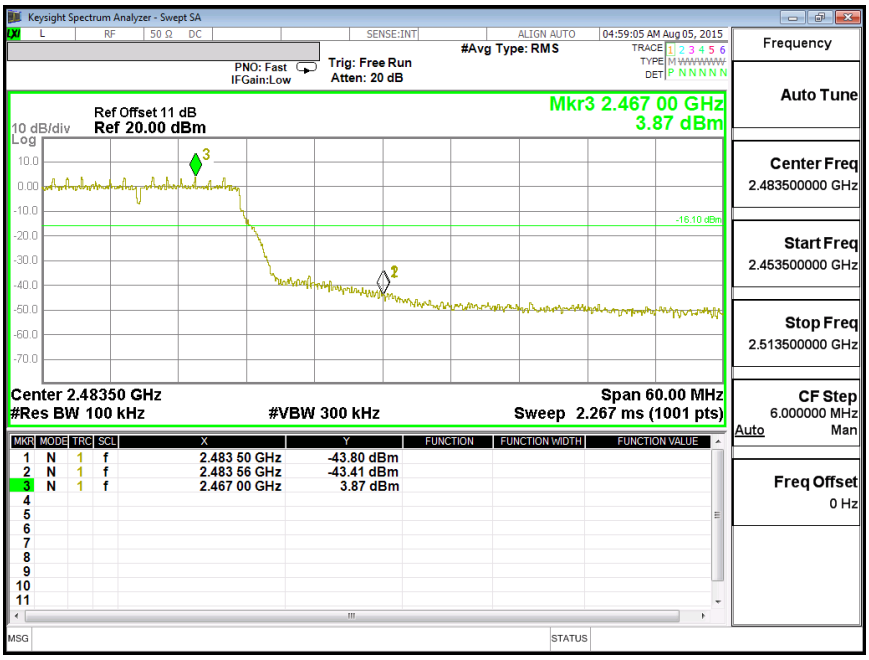


HIGH CHANNEL BANDEDGE, Chain 0

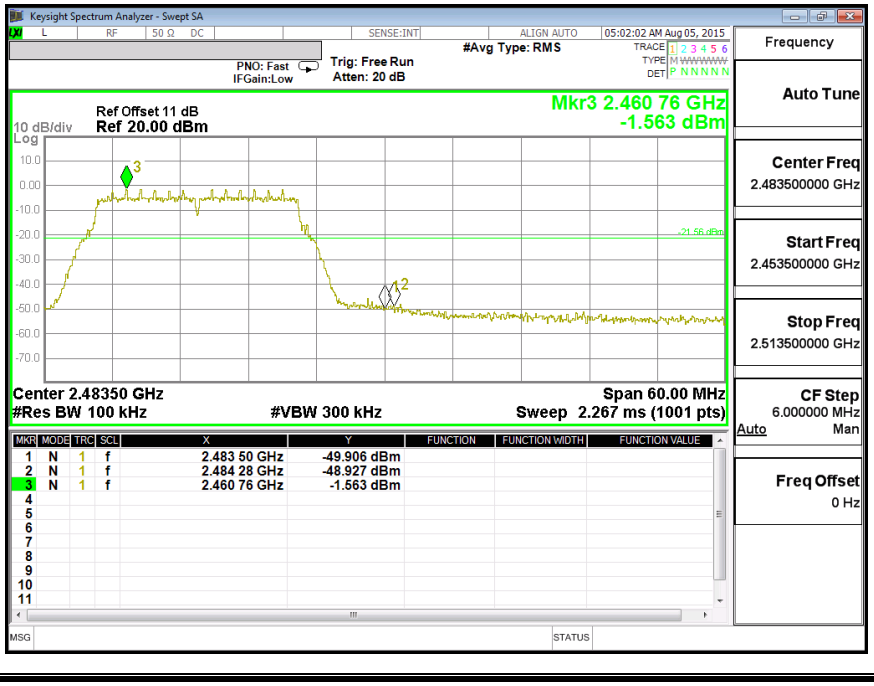
AUTHORIZED BAND EDGE Chain 0 HIGH CH10



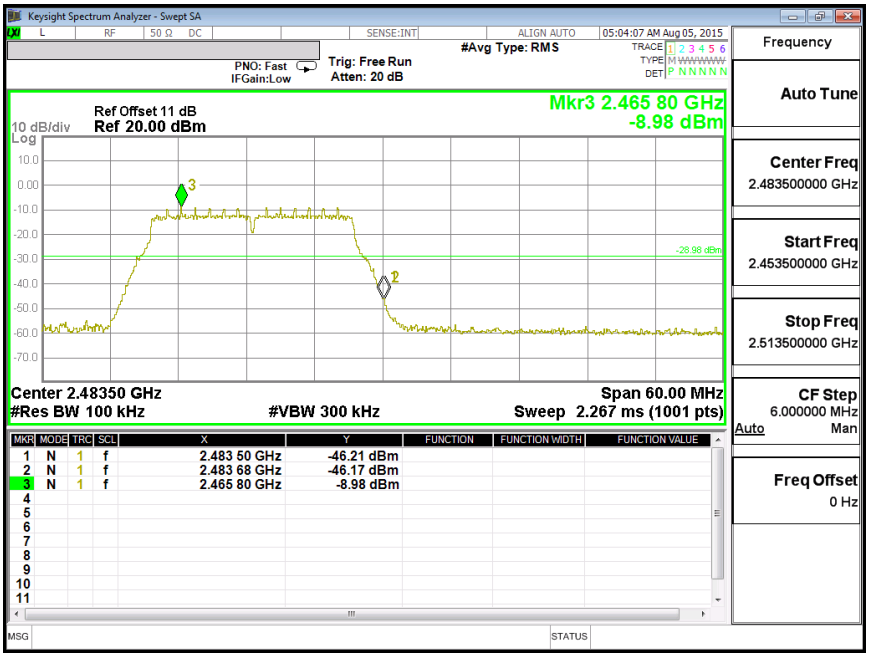
AUTHORIZED BAND EDGE Chain 0 HIGH CH11



AUTHORIZED BAND EDGE Chain 0 HIGH CH12

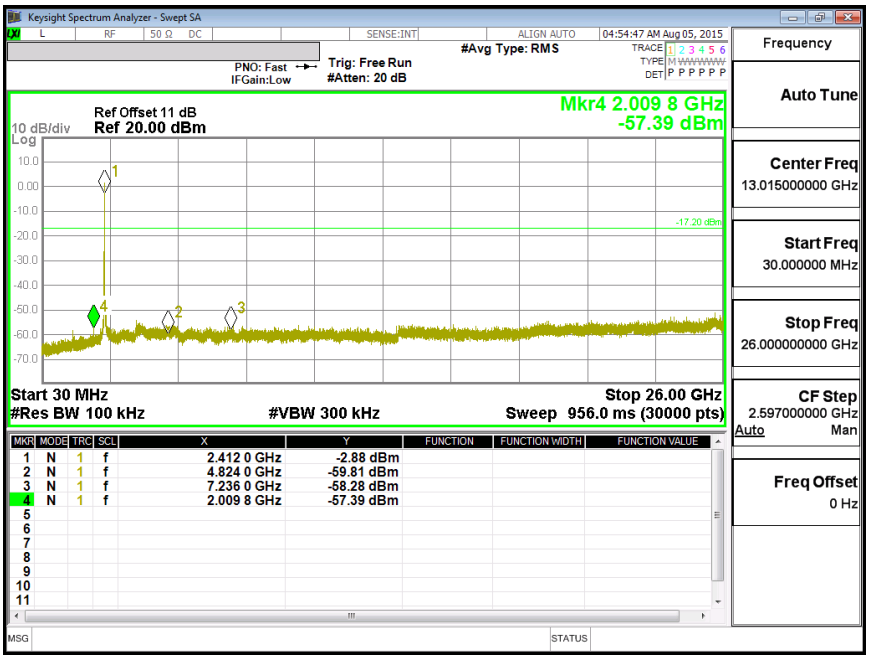


AUTHORIZED BAND EDGE Chain 0 HIGH CH13

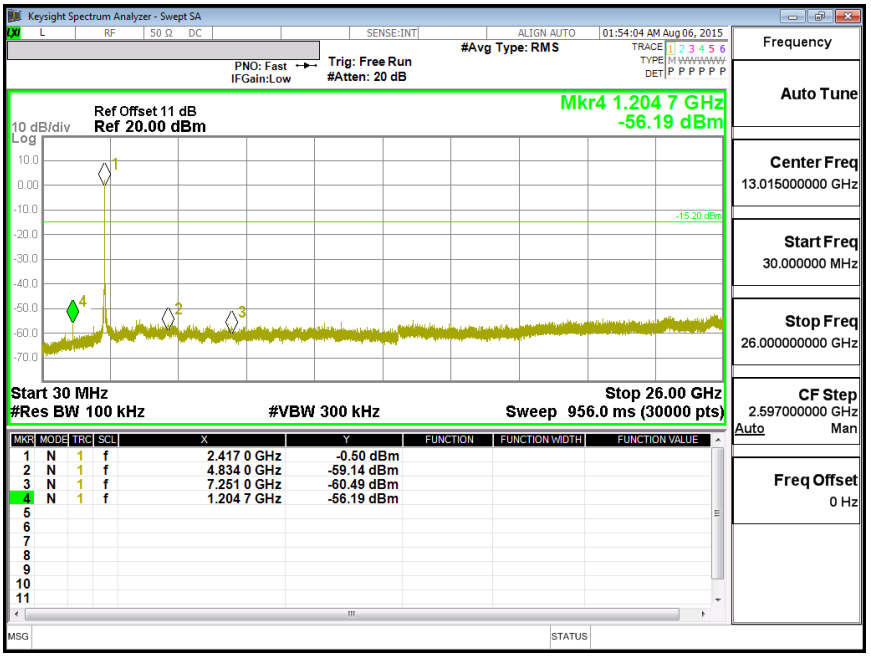


OUT-OF-BAND EMISSIONS, Chain 0

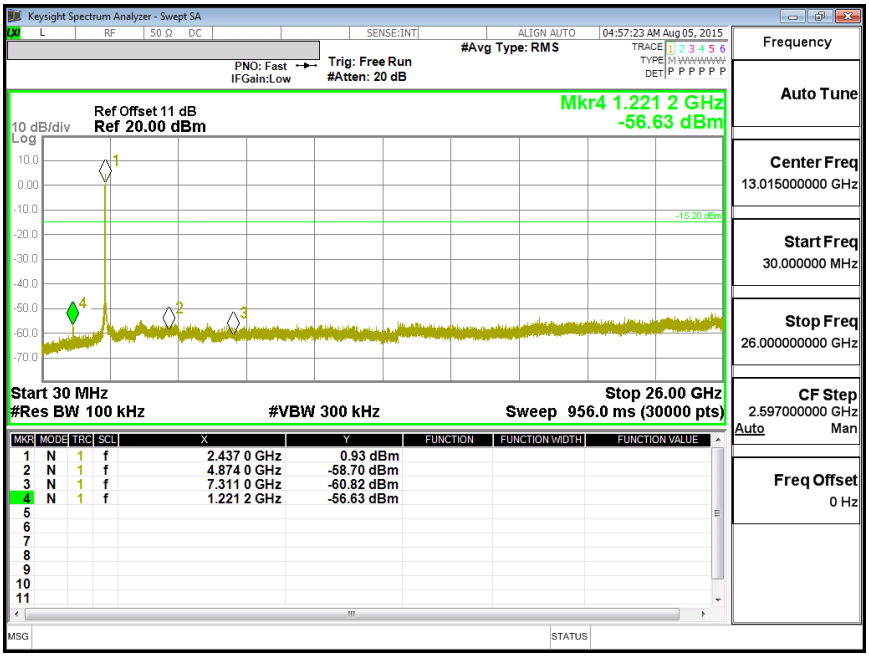
OUT OF BAND Chain 0 LOW CH1



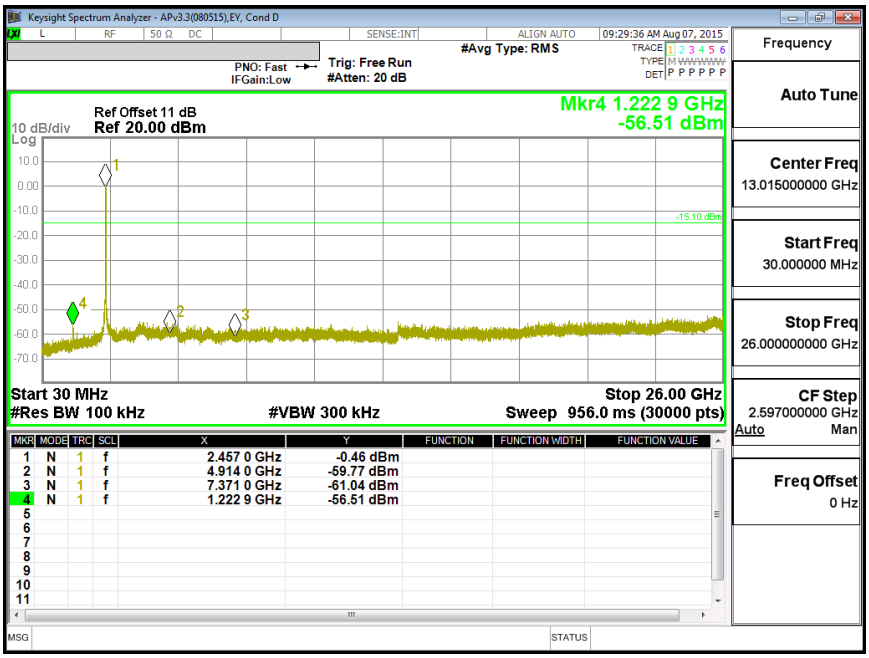
OUT OF BAND Chain 0 LOW CH2



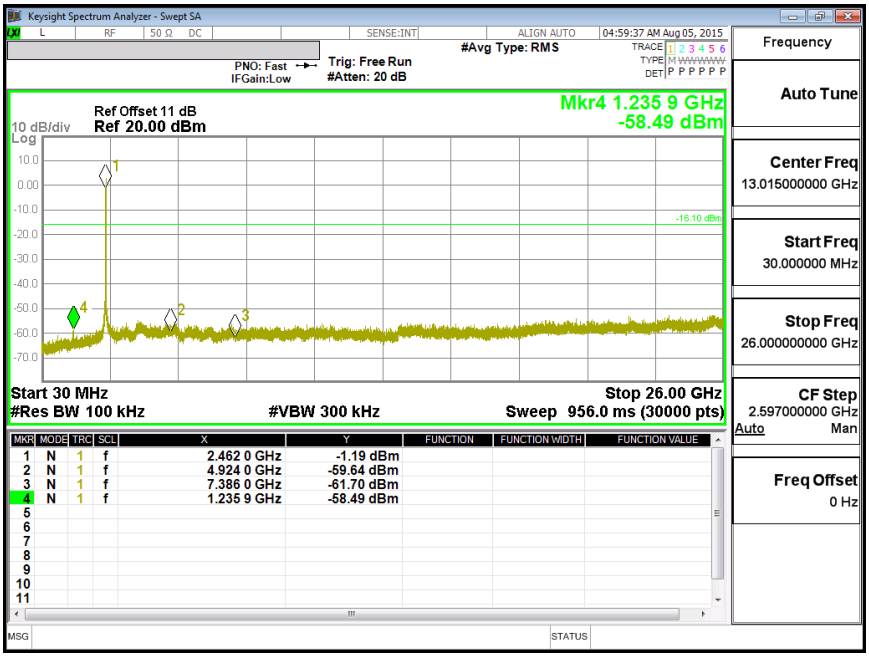
OUT OF BAND Chain 0 MID CH



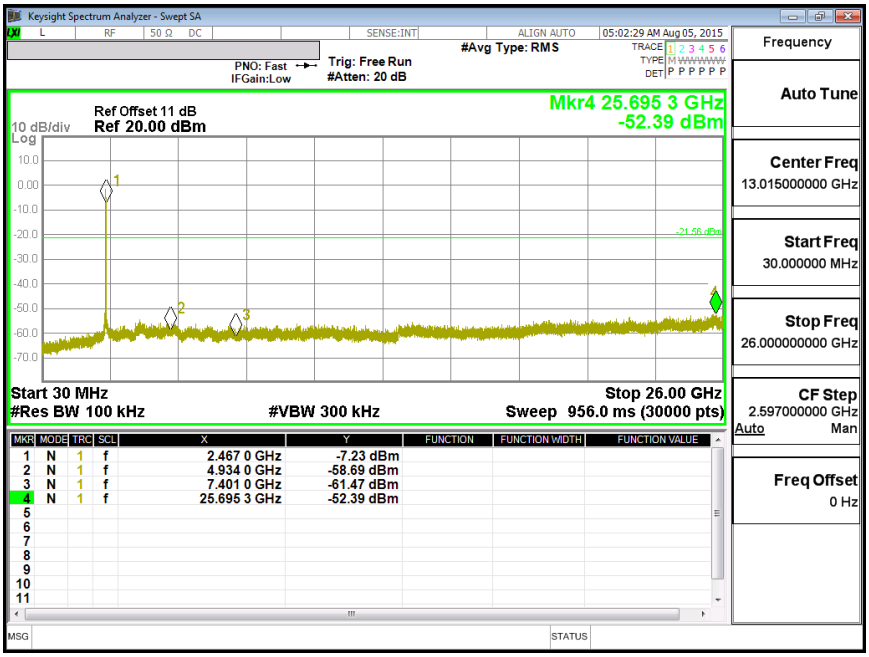
OUT OF BAND Chain 0 HIGH CH10



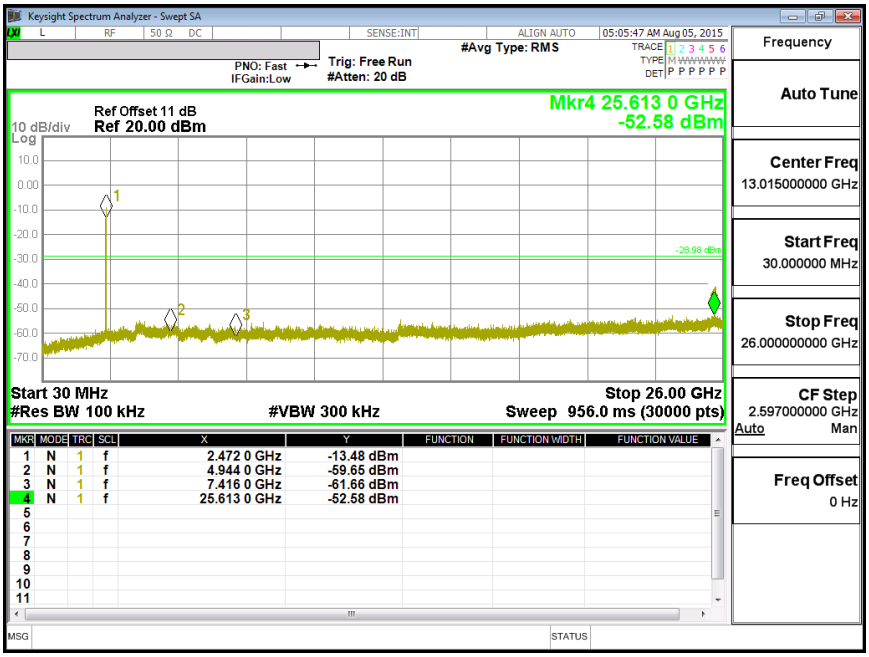
OUT OF BAND Chain 0 HIGH CH11



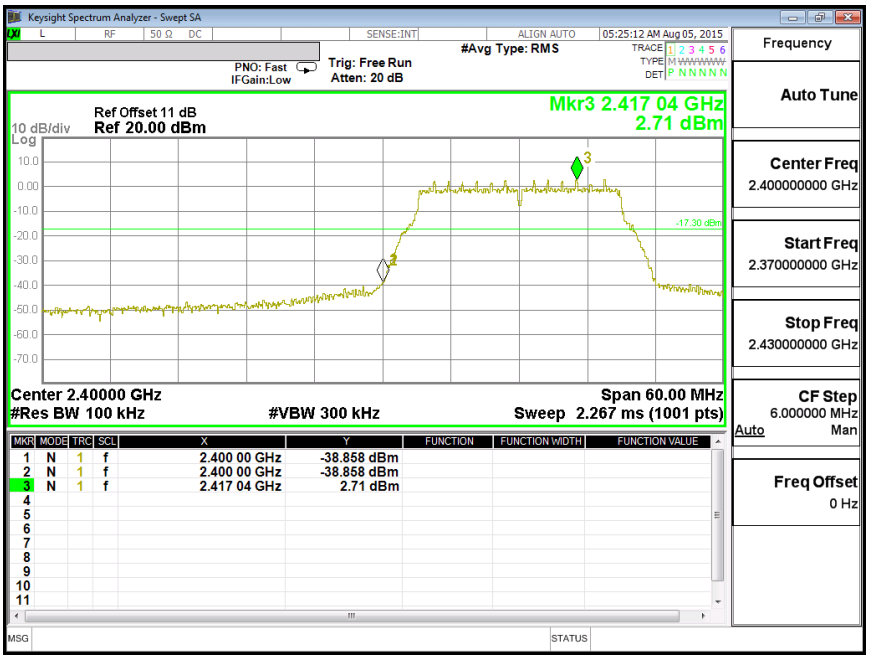
OUT OF BAND Chain 0 HIGH CH12



OUT OF BAND Chain 0 HIGH CH13

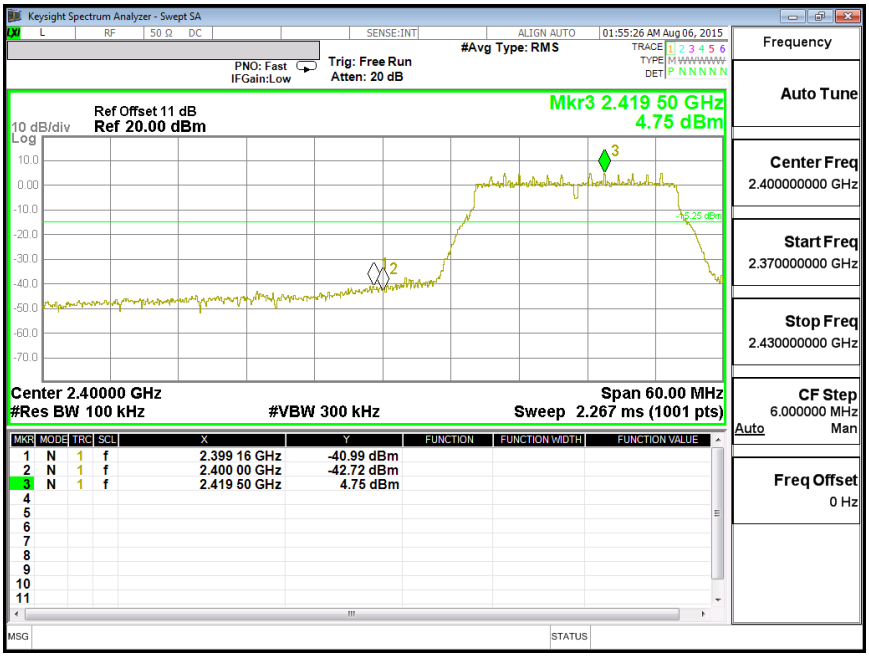


LOW CHANNEL BANDEDGE, Chain 1



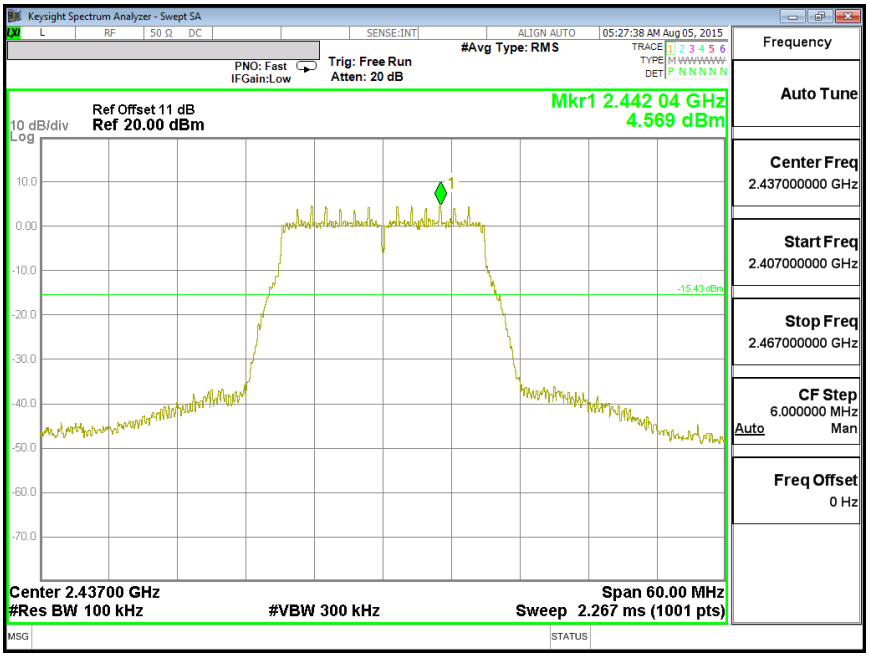
AUTHORIZED BAND EDGE Chain 1 LOW CH1

AUTHORIZED BAND EDGE Chain 1 LOW CH2



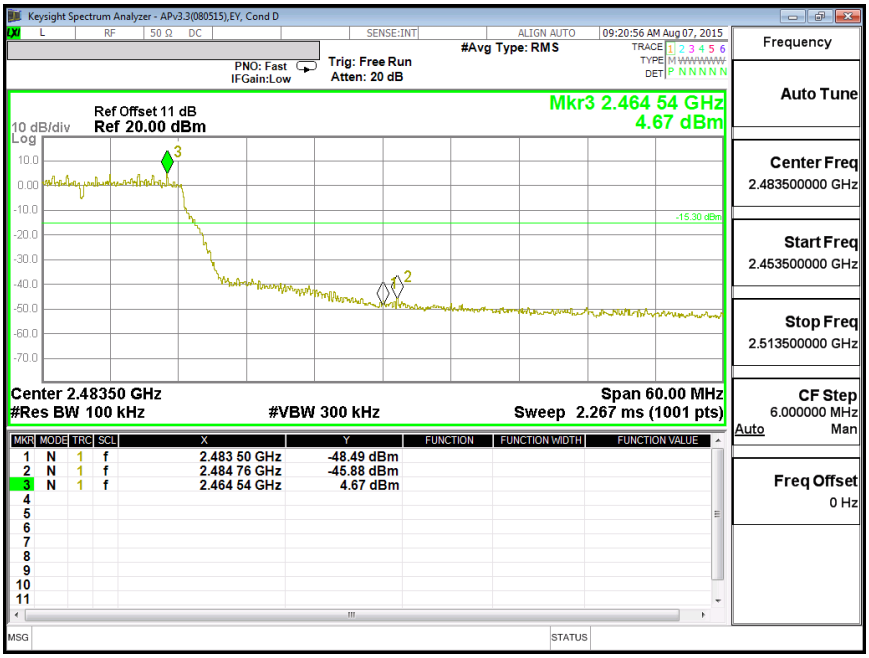
MID CHANNEL BANDEDGE

AUTHORIZED BAND EDGE MID CH

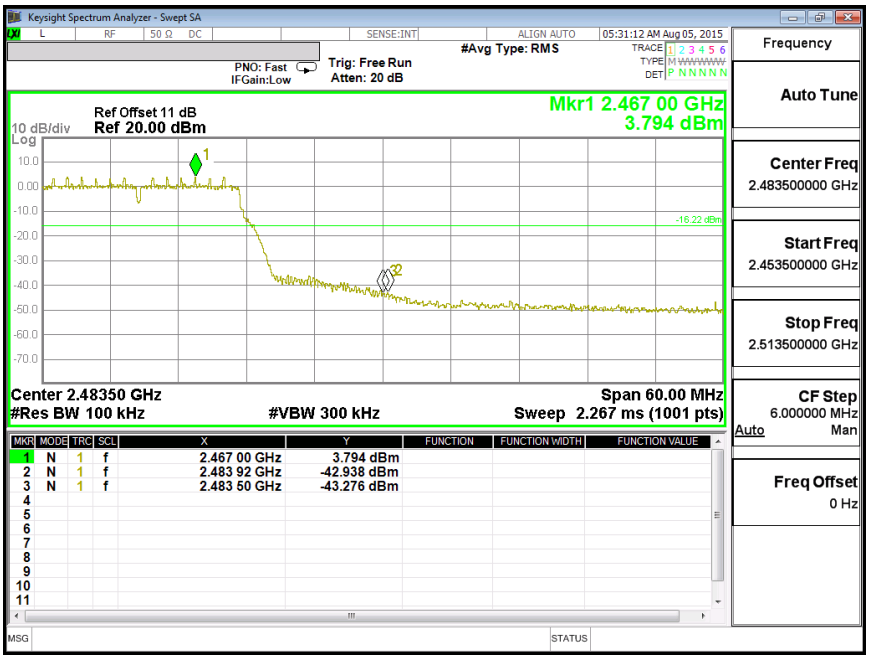


HIGH CHANNEL BANDEDGE, Chain 1

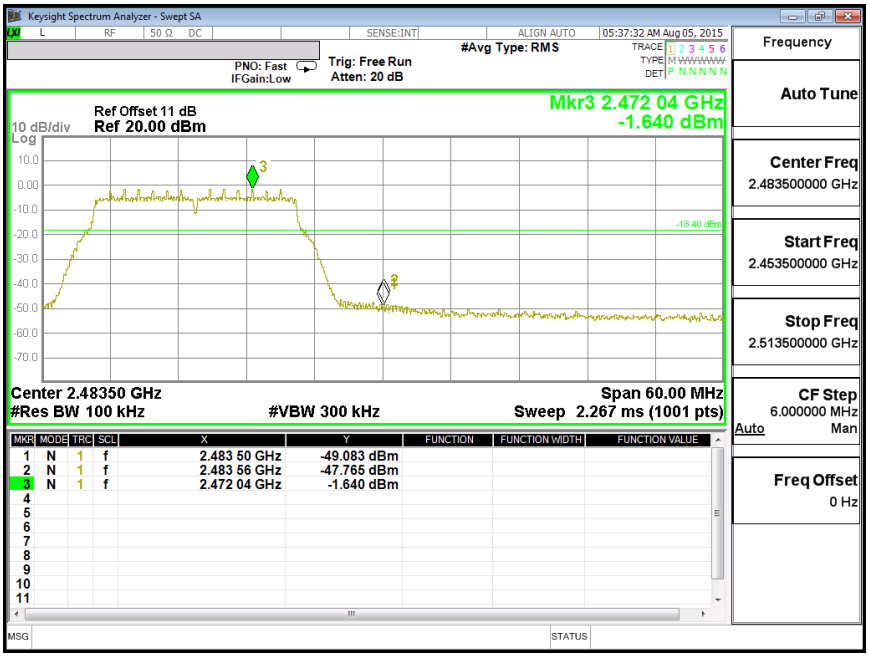
AUTHORIZED BAND EDGE Chain 1 HIGH CH10



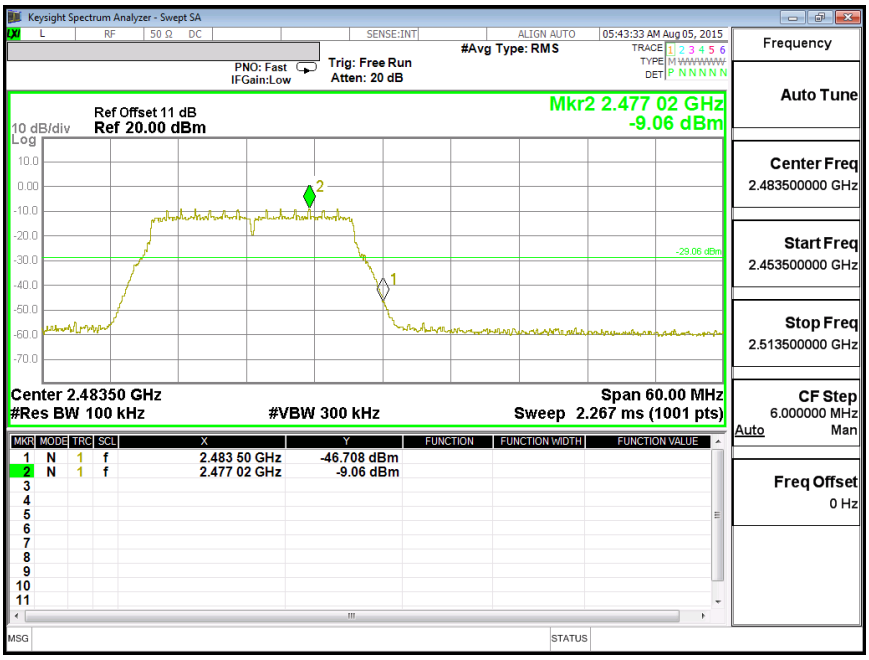
AUTHORIZED BAND EDGE Chain 1 HIGH CH11



AUTHORIZED BAND EDGE Chain 1 HIGH CH12

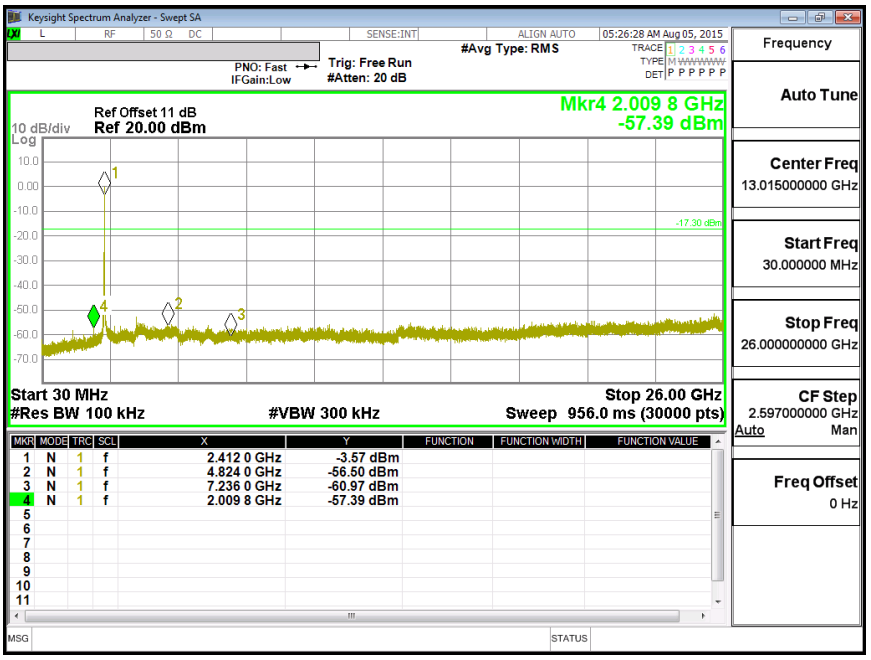


AUTHORIZED BAND EDGE Chain 1 HIGH CH13

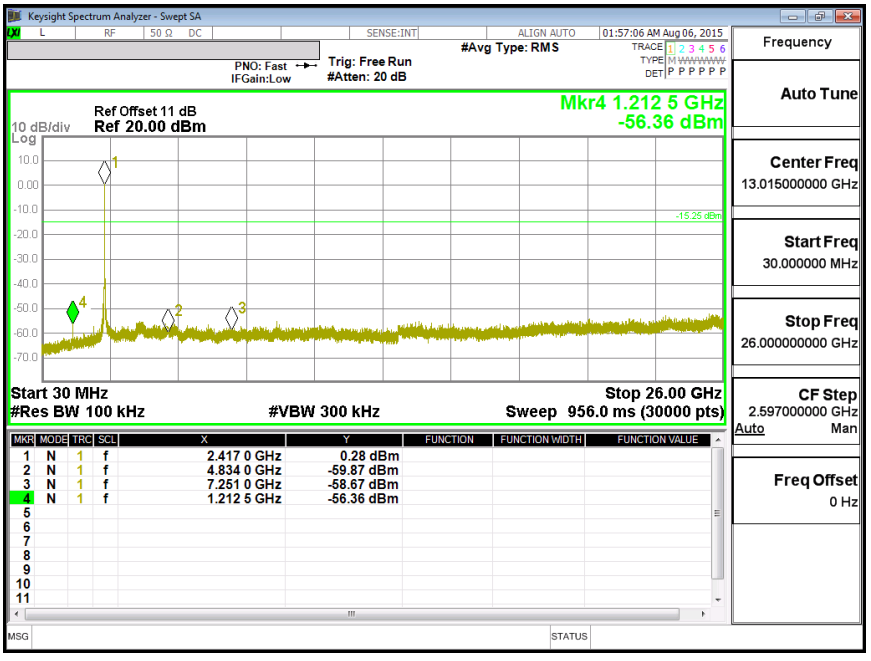


OUT-OF-BAND EMISSIONS, Chain 1

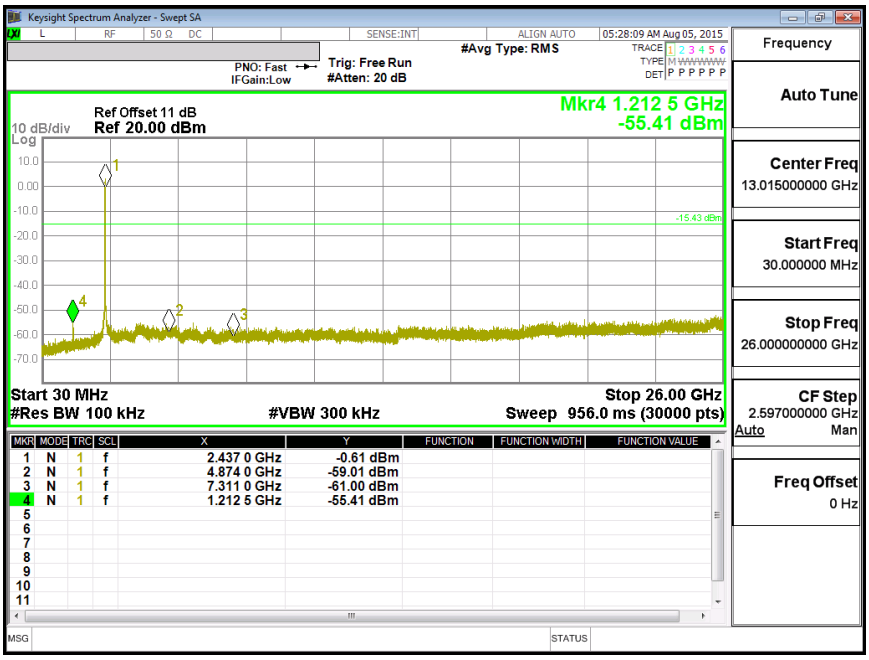
OUT OF BAND Chain 1 LOW CH1



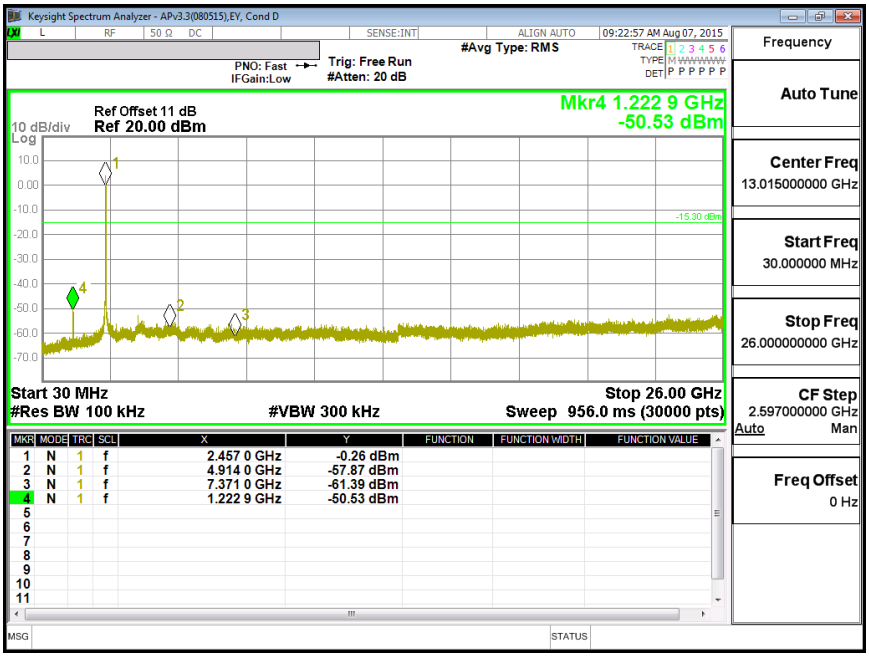
OUT OF BAND Chain 1 LOW CH2



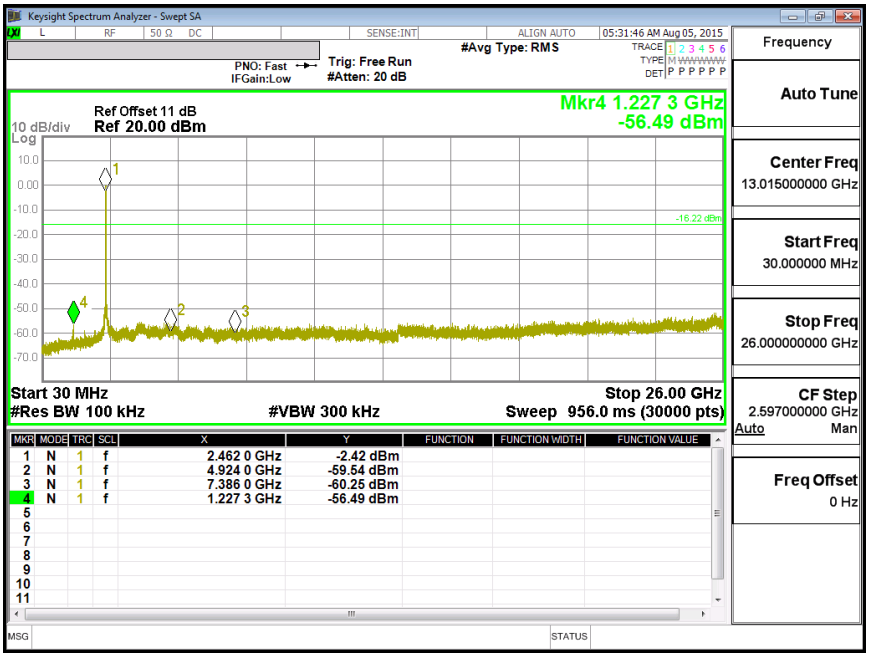
OUT OF BAND Chain 1 MID CH



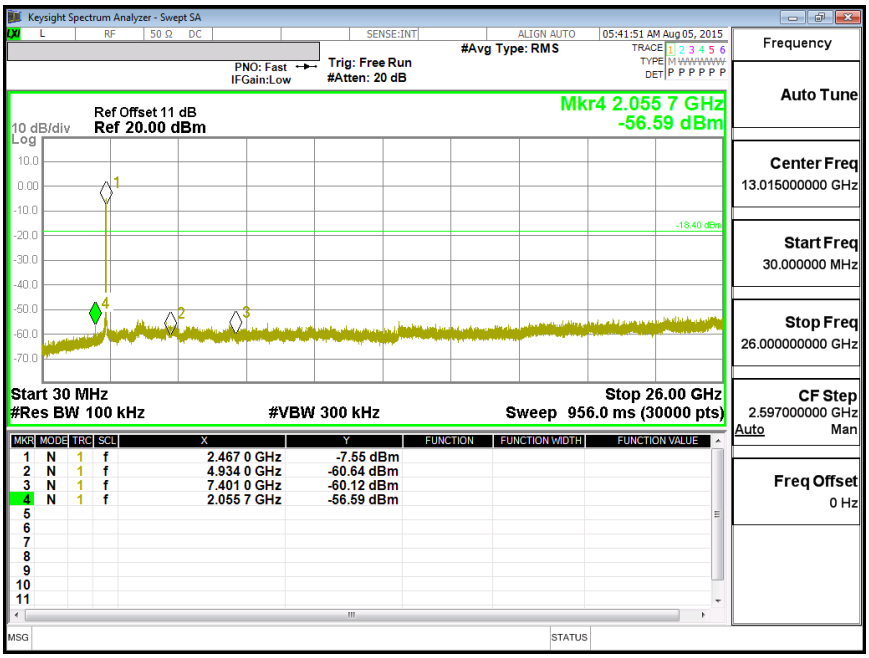
OUT OF BAND Chain 1 HIGH CH10



OUT OF BAND Chain 1 HIGH CH11



OUT OF BAND Chain 1 HIGH CH12



OUT OF BAND Chain 1 HIGH CH13